



Knowledge Management and Information Technology

(Know-IT Encyclopedia)



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Neal Pollock



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ACRONYM LIST

INTRODUCTION

As knowledge management (KM) and information technology (IT) have developed and grown, they have evolved numerous technical terms and phrases that those not intimately involved in these disciplines may find difficult to understand. These terms are useful in efficiently communicating among professionals, but they can be difficult to absorb in a rapid manner, and it can be difficult to obtain consistent definitions. There is a spectrum of tools to address different aspects of the jargon development phenomenon. At the low end of the range are lists that define each letter of an acronym but do not usually provide much else—they are essentially data-level tools. Many glossaries provide short definitions of terms and phrases; they are essentially information-level tools. Unless one has an idea or context already, it is difficult to truly understand when only provided with information. This encyclopedia addresses a void in the present spectrum. It is an attempt to create and distribute a knowledge-level tool, although it is not as voluminous as a full-boat encyclopedia (which would be impossible to adequately distribute). This encyclopedia was constructed using a number of different sources. Much of it, however, is tacit knowledge taken from my experience on-the-job at the Program Executive Office for Information Technology (PEO-IT), the Department of the Navy (DON) Chief Information Office (CIO), and from courses taken at the Information Resources Management College (IRMC) to achieve certifications (CIO and National Security Telecommunications and Information Systems Security Instruction [NSTISSI] 4011).

This document is not all-inclusive, but it provides a first step at capturing and elucidating many commonly used KM and IT terms and phrases. Descriptions are limited to KM and IT word usage though some words have other meanings (not addressed here) as well. A Web version is hosted on the Defense Acquisition University (DAU) and PEO-IT Web sites at <http://www.dau.mil/pubs/pubs-main.asp> and <http://www.peo-it.navy.mil>, and included in future versions of the DON Knowledge Centric Organization (KCO) Toolkit CD. The online version will be maintained and periodically updated. Please help keep the online version current by submitting additional terms and comments via the Web site. For more information, feedback, or to submit changes, please contact me at 703-601-3061, 703-946-2731, or pollockn@spawar.navy.mil.

I have added a considerable number of quotations from various sources to enhance the encyclopedia. They are an attempt to extend the knowledge inherent in this document into the longer scope of human knowledge and into the realm of wisdom. I anticipate that some readers will find them of particular value and interest while others will find them perplexing or even

annoying. I have differentiated them from the text via differing font size and placement at the end of each entry. However, similar to Zen Buddhist koans, the quotations that may appear the least relevant may be the very ones to shed light where it is needed most (though I had to stretch a bit to find a quote for a few of the entries). I hope you find them enjoyable as well as enlightening. As Samuel Johnson (1709–1784) stated: “Every quotation contributes something to the stability or enlargement of the language” (from *The Oxford Dictionary of Quotations*, Oxford University Press, New York, 1980, p. 281, No. 7) and Pettibone Poole said, “He who laughs, lasts” (from *A Glass Eye at the Keyhole*, 1938 as quoted by Robert Byrne in *The 637 Best Things Anybody Ever Said*, Atheneum, NY, 1982, #72).

USES

This encyclopedia can, of course, be used as a reference document (similar to the *Encyclopedia Britannica* or *Americana*) for KM and IT terms and phrases. It can also be used as a training aid for KM and IT courses. In addition, it can be used as an INDOC (indoctrination) tool for new employees. Such usage can provide the person new to IT or KM with basic knowledge from which to build and can elicit informed questions to expand the person’s personal knowledge base by eliciting implicit or tacit knowledge from more experienced employees. In addition, PEO-IT intends to employ the encyclopedia as part of its Enterprise Solutions outreach program.

NAVIGATION

An alphabetic banner at the start of the document provides hyperlinks to the letters of the alphabet within the document as well as to the acronym list. Depending upon your software, you may have to hit the “control” key while clicking the left mouse button to reach the desired location. The letters and acronym list may also be directly accessed through “Insert” on the tool bar, followed by “Bookmark,” selecting the element desired, and then “Go to.”

The acronym list is attached at the beginning of the document. It includes references to where acronyms are used within the encyclopedia and can, therefore, be used as an abbreviated index. Searches in Microsoft Word can also be made. These can be facilitated (if searching for entries) by selecting “advanced search,” “font,” and “bold” since the entry headers are all in bold. Thus, only the entry headers (which are repeated in the acronym list) will be found via this search.

DISCLAIMER

Opinions, conclusions, and recommendations expressed or implied within are solely those of the authors. They do not necessarily represent the views of the Department of the Navy or any other U.S. government agency. Cleared for public release; distribution unlimited (from *Information Age Anthology: Part Four, International Affairs*, David Alberts and Daniel Papp, Eds., National Defense University (NDU) Press, Washington, DC, 1987, p. iv).

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Other Contributors: David Akin (University of Maryland), John Andre (GSA), Richard Burk (HUD), Dr. Robert Burkuhl (SOCOM), Charles Cather (HQDA, U.S. Army), Ken Creighton (IIT Research Institute), Matt D'Antuono (SSC Charleston, Washington Navy Yard), Clay Dean (NAVFAC), Walt Dyer (PEO-IT), Becky Fitzgerald (CINCPACFLT, U.S. Navy), Virgil Frizzel (George Mason University), Karen Gilmore (DAU), Beth Gramoy (SPAWAR Systems Center, San Diego), Gary Hacker (OPM), Janice Herd (Library of Congress), John Hickok (DAU), Hans Jerrell (DAU), Erik Johnson (PEO-IT), Seth Kahan (World Bank), Geoff Malafsky (TII Corp.), Dr. Margaret Myers (ASD (C³I)), Dick Opp (PEO-IT), Lisa Pirone (EDO Corp.), Mike Rauscher (U.S. Forest Service), Dr. Vincent Ribiere (American University), Harriet Riofrio (OSD), Charles Rogers (SSC Charleston, Washington Navy Yard), Janet Scheitle (U.S. Army), Susan Tarr (Library of Congress), Susan Turnbull (GSA), Bob Turner (FAA), Peter Williams (Utah State University), and Bill Windhurst (SPAWAR). A special thank you to my publisher, Greg Caruth, and editors Martha Polkey and Debbie Gonzalez of the DAU, who have vastly improved the readability and usefulness of this book, and to everyone who helped make this dream into a reality.

Neal J. Pollock

Acronyms

Note: encyclopedia entries (headers) are in **bold**

ABC	Activity-Based Costing
ACAT	Acquisition CAtegory—see CBR, CCA, DAE, PM, and 8121
ACWP	Actual Cost of Work Performed—see EVM
ADA	Americans with Disabilities Act—see Section 508
ADP	Automated Data Processing—see IT
AFB	Air Force Base—see DSS
AFIT	Air Force Institute of Technology—see DSS
AFP	Approval for Full Production—see Buzzword Compliant
AHP	Analytical Hierarchy Process
AI	Artificial Intelligence
AII	Assuring the Information Infrastructure— IRMC Course
AIS	Automated Information System—see IT
AMPS	Analog Mobile Phone Service
ANOVA	ANalysis Of VAriance
ANSI	American National Standards Institute
AOL	America OnLine—see ISP, P2P, Vortal
AP	Access Point
APC	Acquisition Professional Corps—see DAWIA
API	Application Programming Interface
APMC	Advanced Program Management Course—see Decision Theory, PM, Systems Engineering
APP	Application Portability Profile—see NIST, Portability
AR	Acquisition Reform
AS	Administrative Support—see DAWPDP
ASCII	American Standard Code for Information Interchange—see Cookie
ASN (AR)	Assistant Secretary of the Navy for Acquisition Reform—see PM
ASP	Active Server Page—see Webification
ASP	Application Service Provider
ASR	Automatic Speech Recognition
ASSIST	Automated System Security Incident Support Team—see IO, PGP
ASU	Approval for Service Use—see Buzzword Compliant
ATM	Asynchronous Transfer Mode
AWT	Abstract Windowing Toolkit—see Java
B/L	BaseLine
B2B	Business to Business
B2C	Business to Customer (or Consumer)
BAC	Budgeted At Completion—see EVM
BAR	Behaviorally-Anchored Rating (Scale)
BBS	Bulletin Board System—see Intellectual Property
BCA	Bridge Certification Authority—see CA
BCA	Business Case Analysis—see ROI

BCWP	Budgeted Cost of Work Performed—see EVM
BCWS	Budgeted Cost of Work Scheduled—see EVM
BIA	Business Impact Analysis—see COOP
BOA	Basic Ordering Agreements—see GWAC
BPA	Blanket Purchasing Agreements—see GWAC, ESI
BPR	Business Process Reengineering
BRAC	Base Realignment And Closure Act
BSS	Basic Service Set
BTMP	Business and Technical Management Professionals—see DAWPDP
BUPERS	BUreau of PERSONnel—see DSS
B/W	BandWidth
C ²	Command and Control—see CCRP, C ² W, DIAP
C ² W	Command and Control Warfare
C ³ I	Command, Control, Communications, and Intelligence
C ⁴ I	Command, Control, Communications, Computers, and Intelligence
C ⁴ ISP	Command, Control, Communications, Computers, and Intelligence Support Plan—see Architecture
CA	Certification Authority
CAAP	Critical Asset Assurance Program
CAC	Common Access Card
CAD	Card Acceptance Device—see Smart Card
CAD/CAM	Computer-Aided Design/Manufacturing—see DB
CAIV	Cost As an Independent Variable
CALEA	Communications Assistance to Law Enforcement Act
CAPP	Crisis Action Planning Process—see IO
CASE	Computer-Aided Software Engineering—see DB, S/W
CBR	Case Based Reasoning
CCA	Clinger-Cohen Act
CCITT	Committee for International Telegraph and Telephone—see ITU
c-commerce	collaborative commerce
CCPA	Cable Communications Policy Act
CCRP	Command and Control Research Program (formerly: Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C ⁴ ISR) Cooperative Research Project)
CD	Compact Disk
CDA	Central Design Activity or Communications Decency Act
CDA	Component Data Administrator—see Data Administration
CDMA	Code-Division Multiple Access
CDRL	Contract Data Requirements List—see Data
CD-R	Compact Disk-Recordable—see CD, Log Files, OSD
CD-ROM	Compact Disk Read-Only Memory—see DVD, Distributed Learning, IT, OSD
CD-RW	Compact Disk-Re-Writable—see Optical Storage Device

CEO	Chief Executive Officer—see Capital Planning and Investment, CXOs, NSTAC, Performance- and Results-Based Management, Vision and Mental Model
CERIAS	Center for Education and Research in Information Assurance and Security—see Electronic Business, Hackers
CERT	Computer Emergency Response Team
cf.	See (in References)
CFAA	Computer Fraud and Abuse Act
CFHA	Computer Fraud and Hacking Act
CFO	Chief Financial Officer—see Capital Planning and Investment, FISCAM, GPRA
CFOA	Chief Financial Officers Act
CHAID	CHi square Automatic Interaction Detection—see Data Mining
CHAP	Challenge Handshake Authentication Protocol—see Authentication
CIA	Central Intelligence Agency—see PCCIP, Vulnerability
CIANA	Confidentiality, Integrity, Availability, Nonrepudiation, and Authentication
CIAO	Critical Infrastructure Assurance Officer
CICG	Critical Infrastructure Coordination Group—see PDD-63
CIM	Computer Integrated Manufacturing—see DB
CIO	Chief Information Officer
CIP	Critical Infrastructure Protection
CIPC	Critical Infrastructure Protection Council
CIRT	Computer Incident Response Team
CISA	Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C⁴ISR) Integration Support Activity
CISO	Chief Information Security Officer—see DB, IAM
CISSP	Certified Information Systems Security Professional—see ISC²
CIWS	Close In Weapons System—see CND
CKO	Chief Knowledge Officer
CLO	Chief Learning Officer—see CXOs
CMM	Capability Maturity Model
CMU	Carnegie-Mellon University—see CMM, Risk Assessment/Analysis, S/W, SEI
CNA	Center for Naval Analyses—see Interoperability
CNA	Computer Network Attack—see IO
CND	Computer Network Defense
COAT	Council On Accessible Technology—see Section 508
CobIT	Control objectives for Information and related Technology
COE	Common Operating Environment
CoI	Community of Interest
COMSEC	COMMunications SECurity—see DITSCAP
COO	Chief Operating Officer—see CXOs
COOP	Continuity Of Operations Plan
CoP	Community of Practice

COPPA	Children's Online Privacy Protection Act
CORBA	Common Object Request Broker Architecture
COS	Chip Operating System
COTS	Contractor Off-The-Shelf
CPI	Cost Performance Index—see EVM
CPO	Chief Planning Officer, Chief Privacy Officer, or Chief Petty Officer—see CXOs
CPS	Certificate Practice Statement—see Policy
CPU	Central Processor Unit—see S/W
CREATE	Committee on Resources for Electronic Accessible Technology to End-users—see Section 508
CRL	Certificate Revocation List
CRM	Customer Relationship Management
CSA	Computer Security Act
C/SCSC	Cost/Schedule Control Systems Criteria—see Buzzword Compliant, EVM
CSMA/CA	Carrier Sense Multiple Access/Collision Avoidance—see IEEE
CSSPAB	Computer System Security and Privacy Advisory Board—see Computer Security Act
CST	Critical information systems technologies—IRMC Course
CW	Collected Works (of Carl Gustav Jung)
CWML	Compact Wireless Markup Language—see WML
CXO	combination acronym for CEO, CIO, etc. where x is a variable
C&A	Certification and Accreditation—see DITSCAP, IASE
C&E	Cause and Effect (chain)-cf. Feedback
DA	Design Agent—see CDA
DAA	Designated Approval Authority—see DITSCAP, IAM, NSTISSI, SSAA
DAC	Discretionary Access Control
DAE	Defense Acquisition Executive
D-AMPS	Digital Advanced Mobile Phone Service—see AMPS
DARPA	Defense Advanced Research Project Agency—see CIRT, ITU, Internet, NII
DAU	Defense Acquisition University—see DAWIA, PM, Systems Engineering
DAWIA	Defense Acquisition Workforce Improvement Act
DAWPDP	Defense Acquisition Workforce Personnel Demonstration Project
DB	DataBase
DBMS	DataBase Management System
DCMC	Defense Contract Management Command—see Components, Performance- and Results-Based Management
DDDS	Defense Data Dictionary System—see Data Dictionary, Standardization
DDL	Data Definition Language—see DB
DDM	Department of Defense Data Model—see Data Administration
DDOS	Distributed Denial Of Service
DES	Data Encryption Standard
DFAS	Defense Finance and Accounting Service—see EFT
DIAP	Defense-wide Information Assurance Program

DiD	Defense in Depth
DII	Defense Information Infrastructure
DINK	Data, INformation, and Knowledge
DISA	Defense Information Systems Agency
DISN	Defense Information Systems Network—see DISA
DITSCAP	Defense Information Technology Security Certification and Accreditation Process
DLA	Defense Logistics Agency—see components, DSS
DLR	Disk Operating System Local Area Network requestor—see Protocol
DM	Data Management
DMCA	Digital Millennium Copyright Act
DMIR	Data Management and Interoperability Repository—see DM, Data Repository, Metadata Repository
DML	Data Manipulation Language—see DB
DMS	Data Management Strategies and Technologies—IRMC Course
DMZ	DeMilitarized Zone
DNS	Domain Name Server
DoA	Department of the Army—see Departments
DoAF	Department of the Air Force—see Departments
DoC	Department of Commerce—see PCCIP
DoD	Department of Defense—see Architecture Framework, Architectures and Infrastructures, A-11, A-76, BRAC, Buzzword Compliant, Capital Planning and Investment, CIO, CCA, C³I, CAC, COE, Components, CIRT, Core Functions, CAIV, CAAP, CIAO, CIP, CIPC, cyberlaw, cybrarian, CISA, Data Administration, Data Dictionary, Data Element, DM, DAE, Defense, Departments, DoDD, EVM, eB, eC, EDI, EFT, Enterprise, FASA, GIG, Information, IASE, Information Infrastructure, IM, IRM, IRMC, INFOSEC, ITA, IDEF1X, IPT, Interface, ISO, Internet, JTA, NII, OA, Performance- and Results-Based Management, PPBS, PCCIP, Privacy Act, Process Improvement, PM, PKI, Quality, Seat Management, SBU, Services, SCSCG, S/W, SEI, Spectrum Management, Standardization, TA, TCO, X.509, 8121
DoDD	Department of Defense Directive—see C³I, CAAP, DAE, DISA, DITSCAP, DIAP, Eb, IM, IO, IRM, INFOSEC, NSTISSI, policy
DoE	Department of Education—see PCCIP
DoE	Department of Energy—see CIRT, PCCIP
DoJ	Department of Justice—see PCCIP
DOLAP	Desktop OnLine Analytical Processing —see OLAP
DoN	Department of the Navy—see INTRODUCTION, ACKNOWLEDGMENTS, Benchmarking, Capital Planning, Change Management, CCA, Cop, Cop CD, CIAO, CIP, CIPC, Cybrarian, DM, DII, Departments, e-Gov, Hyperlink, IL, KCO CD, KM, LO, NMCI, NCW, Organizational Learning, PM, Reverse Auction, Search Engine, Seat Management, Section 508, S/W, Systems Thinking, Tacit Knowledge, Taxonomy

DoS	Department of State—see Information Assurance Red Team, SPO
DOS	Disk Operating System—see COS, OS, Protocol, System Software
DoS	Denial of Service
DoT	Department of Transportation—see PCCIP
DoT	Department of the Treasury—see PCCIP
DRI	Defense Reform Initiative
DSA	Digital Signature Algorithm—see Public Key Cryptosystems
DS-CDMA	another name for Direct Sequence Spread Spectrum (DSSS)
DSL	Digital Subscriber Line
DSMC	Defense Systems Management College—see acquisition, DAWIA, PM, Systems Engineering
DSS	Decision Support Systems
DSSS	Direct Sequence Spread Spectrum
DVD	Digital Versatile Disk
DWDM	Dense Wavelength Division Multiplexing
EA	Economic Analysis—see 8121
EAC	Estimate At Completion—see EVM
EAI	Enterprise Application Integration
eB	electronic Business
eBusiness	electronic Business
eC	electronic Commerce
e-checks	electronic checks
eCommerce	electronic Commerce
ECPA	Electronic Communications Privacy Act
EDGE	Enhanced Data Global System for Mobile Communications Environment
EDI	Electronic Data Interchange
EEA	Economic Espionage Act
e-FOIA	electronic Freedom Of Information Act
EFT	Electronic Funds Transfer or Electronic Financial Transaction
e-Gov	electronic Government
EIS	Executive Information System
e-learning	electronic learning—cf. Distributed Learning
e-mail	electronic mail
EMS	Electronic Meeting System—see DSS
E/MSS	Employee/Member Self Service—see EFT
EO	Executive Order—see CCA, CIP, NSTAC, Strategic Planning
EPA	Environmental Protection Agency—see NIC
ERP	Enterprise Resource Planning
ES	Enterprise Solutions
ESA	Enterprise Software Agreement—see ESI
ESI	Enterprise Software Initiative
e-sign	electronic signature
ESP	External Services Provider
ESS	[developing] Enterprise Security Strategies, Guidelines, And Policies—IRMC Course

ESS	Extended Service Set — See IBSS and BSS.
ESTJ	Extroverted, Sensate, Thinking, Judgmental—see Model
ETA	Education, Training and Awareness—see DITSCAP, IASE
ETC	Estimate To Complete—see EVM
EU	European Union
EVM	Earned Value Management
EW	Electronic Warfare—see C ² W, IW
EWSP	Entity-Wide Security Program
FAA	Federal Aviation Administration—see A-76, DSS
FAIR	Federal Activities Inventory Reform Act
FAQs	Frequently Asked Questions
FAR	Federal Acquisition Regulations—see FSS, Section 508
FARA	Federal Acquisition Reform Act
FARC	Federal Acquisition Regulatory Council—see Acquisition
FASA	Federal Acquisition Streamlining Act
FBI	Federal Bureau of Investigation—see CIRT, Cyberlaw, PCCIP
FCC	Federal Communications Commission—cf. Frequency, IEEE, Policy, Section 508
FDA	Functional Data Administrator—see Data Administration
FDM	Frequency-Division Multiplexing
FDMA	Frequency Division Multiple Access—see AMPS
FEIT	Functional Evaluation and Integration Team—see DIAP
FEMA	Federal Emergency Management Agency—cf. COOP, CIP, Disaster Recovery, PCCIP
ff	footnote (in a reference)—see Regression Analysis
FFRDC	Federally Funded Research and Development Center
FGCA	Freedom from Government Competition Act
FHSS	Frequency Hopping Spread Spectrum
FII	Federal Information Infrastructure—see DII
FIPS	Federal Information Processing Standard—see A-130, Data, DES, IDEF1X
FISA	Foreign Intelligence Surveillance Act
FISCAM	Federal Information Technology Security Assessment Manual
FMFIA	Federal Managers Financial Integrity Act
FOIA	Freedom Of Information Act
FORMIS	Framework and Open Reference Model for Information Security—see INFOSEC
FOUO	For Official Use Only—see CIO, CAAP, CIP, DIAP, SBU
four A's	Adaptability, Accountability, Alignment and Awareness
FPC	Federal Preparedness Circular—see COOP, CIP
FSS	Federal Supply Schedules
FTE	Full Time Equivalents—see DRI
FTP	File Transfer Protocol—see Cache Server, PGP, Trojan Horse, URL
FV	First Virtual
F/W	FirmWare—see S/W

GA	Genetic Algorithms
GAA	Generally Applicable and Accepted
GAAP	Generally Accepted Accounting Principles—see GAA
GAO	General Accounting Office—see Audit, Balanced Scorecard, CERT, CIRT, Core Functions, CIP, EVM, FISCAM, GPRA, Information Assurance Red Team, INFOSEC, Penetration Test, Performance- and Results-Based Management, Portfolio Management, Privacy, Pki, Spo, Strategic Planning
Gbps	Gigabits per second; one billion or 10⁹ bits/second
GCCS	Global Command and Control System—see COE
GCSS	Global Combat Support System—see COE
GIG	Global Information Grid
GII	Global Information Infrastructure
GIS	Geographic Information System
GISRA	Government Information Security Reform Act
GITS	Government Information Technology Services Board—see CCA
GMRA	Government Management and Reform Act
GNIE	Global Networked Information Enterprise—see GIG
GOSC	Global Operations and Security Center—see IO
GPEA	Government Paperwork Elimination Act
GPO	Government Printing Office—see XML
GPRA	Government Performance and Results Act
GPRS	General Packet Radio Service
GS	General Semantics—see Semantic Analysis
GS	General Schedule—see DAWPDP
GSA	General Services Administration—see Balanced Scorecard, Capital Planning and Investment, FSS, GWAC, Performance- and Results-Based Management, PDD-63, Seat Management, Section 508
GSM	Global System for Mobile Communications
GST	General Systems Theory
GUI	Graphical User Interface
GWAC	Government Wide Acquisition Contract
HCI	Human Computer Interface
HBR	<i>Harvard Business Review</i> —cf. Assumptions, Balanced Scorecard, Change Management, DSS, IM, IPT, Leadership, LO, Performance- and Results-Based Management, Reengineering, Simulation, Vision and Mental Model
HIPAA	Health Insurance Portability and Accountability Act
HLL	High-Level Languages—cf. Mainframe Computer
HMD	Head Mounted Devices—cf. VR
HOL	High Order Languages—cf. Mainframe Computer
HONE	Hands On Network Environment—cf. Information Map
HPS	High Performing System—cf. Flow, Organizational Learning
HSM	Hierarchical Storage Management
HTML	HyperText Markup Language

HTTP	HyperText Transfer Protocol
IA	Information Assurance
IA	Intelligent Agent
IAG	International Agreements Generator—cf. CBR
IAM	Information Security or Information System Security Assessment Methodology
IASE	Information Assurance Support Environment
IAVA	Information Assurance Vulnerability Alerts—cf. DIAP, IO
IBSS	Independent Basic Service Set
I-CASE	Integrated Computer Aided Software Engineering—cf. S/W
ICE	Independent Cost Analysis—cf. TCO
ICSA	International Computer Security Association—cf. viruses
IDE	Integrated Digital Environment
IDEF1X	Integrated DEFinition for information modeling
IDL	Interface Definition Language—cf. CORBA, Java
IDS	Interface Design Specification—cf. Interface
IDS	Intrusion Detection System
IEEE	Institute of Electrical and Electronics Engineers
IERs	Information Exchange Requirements
IETF	Internet Engineering Task Force—see X.509
IFC	Internet Foundation Classes—cf. Java
IG	Inspector General—cf. GISRA
IIPT	Integrating Integrated Product (or Process) Team—cf. IPT
IITF	Information Infrastructure Task Force—cf. Information Infrastructure
IKM	Institute for Knowledge Management
IL	Information Literacy
IM	Information Management
IMPAC	International Merchant Purchasing Authorization card—cf. FASA
INFOSEC	INFOrmation SECurity or INFOrmation system SECurity
IO	Information Operations
IP	Intellectual Property
IP	Internet Protocol
IPPD	Integrated Product and Process Development—cf. DSS
IPT	Integrated Product (or Process) Team
IQ	Intelligence Quotient—cf. Information Infrastructure, Time Horizon
IRM	Information Resources Management
IRM303	Advanced Information System Acquisition—IRMC Course
IRMC	Information Resources Management College
IRS	Internal Revenue Service—cf. Data Warehouse, DSS, Expert System, GPEA
IRT	Internet Relay Chat
IS	Information Superiority or Information Security or Information System
ISAC	Information Security Analysis Center
ISACA	Information Systems Audit and Control Association—cf. CobIT
ISACF	Information Systems Audit and Control Foundation—cf. CobIT

ISC ²	International Information Systems Security Certification Consortium
ISDN	Integrated Services Digital Network
ISM	Industry, Science, And Medicine—cf. Frequency, Home RF, IEEE
ISO	International Standards Organization
ISP	Internet Service Provider
ISSA	Inter-Service Support Agreements—cf. A-76
ISSM	Information System Security Manager—cf. IASE, IAM
ISSO	Information System Security Officer—cf. IASE, IAM, NSTISSI
ISSP	Information System Security Program—cf. NII
IT	Information Technology
ITA	Information Technology Architecture
ITIM	Information Technology Investment Management—cf. Portfolio Management
ITMRA	Information Technology Management Reform Act—cf. Acquisition, Capital Planning and Investment, CCA, DM, FARA, Policy
ITRB	Information Technology Requirements Board—cf. CCA
ITSEC	Information Technology SECurity—see DITSCAP, IASE
ITU	International Telecommunications Union
IT-21	Information Technology for the 21st Century—cf. Gateway, NMCI
IW	Information Warfare
JFC	Java Foundation Classic—cf. Java
JFCOM	Joint Forces COMmand—cf. DSS
JOPES	Joint Operations Planning and Execution System—cf. IO
JSCOPE	Joint Services Conference On Professional Ethics—cf. FMFIA
JTA	Joint Technical Architecture
JVM	Java Virtual Machine—cf. Java
JV 2020	Joint Vision 2020—cf. Decision Superiority, DiD, IO, Information Superiority, KS
KB	Knowledge Base
KCL	Knowledge Community Leader
KCO	Knowledge-Centric Organization
KCO CD	Knowledge-Centric Organization Compact Disk (toolkit)
KD	Knowledge Density
KID	Knowledge, Information, and/or Data
KM	Knowledge Management
KMCP	Knowledge Management Community of Practice—cf. CoP
KMI	Key Management Infrastructure
KPA	Key Process Area—cf. Acquisition, CMM, S/W
KR	contractor—cf. Penetration Test
KS	Knowledge Superiority
LAN	Local Area Network
LCC	Life-Cycle Cost—cf. PMLCCE, TCO
LCDR	Lieutenant CommanDeR—cf. Micro Purchases
LCL	Lower Control Limits—cf. Change Management
LDAP	Light-Weight Directory Access Protocol

LDC	Leadership for the 21 st Century—IRMC Course
LMDS	Local Multipoint Distribution Service
LO	Learning Organization
LoA	Level of Abstraction
LOC	Lines Of Code—cf. IT, software quality
LoD	Level of Detail—cf. LoA
LRA	Local Registration Authority
LSB	Least Significant Bit—cf. steganography
L2TP	Layer two Tunneling Protocol—cf. VPN
MAGIC	Merced Automated Global Information Collector—cf. Expert System
MAIS	Major Automated Information System—cf. DAE, IRM, 8121
MAN	Metropolitan Area Network
MBTI	Myers-Briggs Type Indicator—cf. CRM, Item Analysis, Model, NLS
MDA	Milestone Decision Authority—cf. DAE
MDAP	Major Defense Acquisition Program—cf. DAE
MEO	Most Efficient Organization—cf. A-76, DRI
MIDS	Multifunctional Information Distribution System—cf. CBR, Common, IERs
MILDEP	MILitary DEPartment—cf. AR, Agency, CIO, Enterprise, 8121
MIME	Multipurpose Internet Mail Extension
MISSI	Multilevel Information System Security Initiative—cf. MLS
MLDT	Mean Logistics Delay Time—cf. Availability
MLS	MultiLevel Security
MMDS	Multipoint Multichannel Distribution Service
MO	Magneto-Optical—cf. OSD
MOLAP	Multidimensional OnLine Analytical Processing —cf. OLAP
MOP	Measuring results of Organizational Performance—IRMC Course
MOTS	Modified Off-The-Shelf—see COTS
MP3	MPEG-1 (Motion Picture Expert Group) Audio Layer-3
MSB	Most Significant Bit—cf. Steganography
MTBF	Mean Time Between Failures—cf. Availability, Burn-In, SPOF
MUDs	Multi-User Dungeon, Multi-User Dimension, Multi-User Dialogue
NADC	Naval Air Development Center—cf. Cryptology, Java
NASA	National Aeronautics and Space Administration—cf. Seat Management, VTC
NATO	North Atlantic Treaty Organization—cf. CBR, Common, DSS, IERs, interoperability
NAVAIR	NAVal AIR systems command—cf. BRAC, CAIV, Knowledge Elicitation, PM
NAVFAC	NAVal FACilities engineering command—cf. CoI, Domain, Knowledge Network
NAVSEA	NAVal SEA systems command—cf. Acronym, ANOVA, CDA, Change Management, Eb, Interoperability, PM
NCW	Network Centric Warfare
NDI	Non Developmental Item—cf. COTS, DITSCAP

NDU	National Defense University—cf. ASR, CIO, Cybrarian, DSS, DAWIA, IRMC, IW, Performance- and Results-Based Management, Standardization, VR
NETMA	Nobody Ever Tells Me Anything—cf. Net Casting
NF	iNtuitive Feeler—cf. NLS, Strategic Thinking
NIAC	National Infrastructure Assurance Council—cf. PDD-63
NIACAP	National Information Assurance Certification and Accreditation Process—cf. DITSCAP
NIC	Networked Improvement Communities
NII	National Information Infrastructure
NIIPA	National Information Infrastructure Protection Act
NIPC	National Infrastructure Protection Center—cf. National Infrastructure
NIST	National Institute Of Standards and Technology
NLP	Natural Language Processing
NLS	NonLinear Systems
NMCI	Navy/Marine Corps Intranet
NNs	Neural Networks
NOR	Net Operating Results—cf. Balanced Scorecard
NPR	National Performance Review
NPT	Newport (Rhode Island)—cf. Balanced Scorecard
NSA	National Security Agency—cf. CSA, DSS, IAM, MLS, NII, NIST, TCSEC
NSD	National Security Directive—cf. CSA
NS/EP	National Security and Emergency Preparedness—cf. NSTAC
NSIE	National Security Information Exchange—cf. NSTAC
NSIPS	Navy Standard Integrated Personnel System—cf. ERP Webify
NSPOM	National Industrial Security Program Operating Manual—cf. Orange Book
NSS	National Security System
NSS	National Security Strategy—cf. KS
NSTAC	National Security Telecommunications Advisory Committee
NSTISSI	National Security Telecommunications and Information Systems Security Instruction
NUWC	Naval Undersea Warfare Center—cf. Balanced Scorecard
NWC	New World of the Chief Information Officer—IRMC Course
OA	Operational Architecture
OCS	Overall Contribution Score—cf. DAWPDP
ODBC	Open DataBase Connectivity—cf. API
OEBF	Open Electronic Book Forum—see NIC
OIO	Offensive Information Operations—cf. API, IO
OIPT	Overarching Integrated Product (or Process) Team—cf. IPT
OIRA	Office of Information and Regulatory Affairs—cf. PRA
OLAP	OnLine Analytical Processing
OLE DB	Object Linking and Embedding DataBase—cf. API
OLTP	OnLine Transaction Processing
OMB	Office of Management and Budget

OMG	Object Management Group—cf. CORBA
OODB	Object Oriented DataBase—cf. DB
OOP	Object-Oriented Programming
OPEVAL	OPERational EVALuation—cf. Beta Testing
OPSEC	OPERations SECurity
OPTEVFOR	OPERational Test and EVALuation FORce—cf. Beta Testing
ORDB	Object Relational DataBase—cf. DB
ORB	Object Request Broker—cf. CORBA
ORD	Operational Requirements Document—cf. Program
OS	Operating System
OSD	Optical Storage Device
P2P	Peer-to-Peer
PACFLT	PACific FLeET—cf. Virtual Collaboration
PCCIP	President's Commission on Critical Infrastructure Protection
PC	Personal Computer—cf. Digicash, Encryption, Firewall, PCAT, SET, Thick (or Fat) and Thin Clients, War Driving
PC	Politically Correct—cf. Buzzword Compliant, Process Improvement
PCAT	Personal Computer Access Tool—cf. Data Dictionary
PCO	Principal (or Procuring) Contracting Officer—cf. FASA
PCS	Personal Communications Services—cf. AMPS
PDA	Personal Digital Assistant
PDD	Presidential Decision Directive
PDF	Portable Document Format
PDIT	Program Development and Integration Team—cf. DIAP
PDRR	Protect-Detect-Restore-Respond—cf. IO
PERL	Practical Extraction and Report Language—cf. Webification Methods
PGP	Pretty Good Privacy
PIN	Personal Identification Number
PKI	Public Key Infrastructure
PKIX	Public Key Infrastructure (X.509)—see X.509
P. L.	Public Law—cf. Anti-Terrorism Act, CIOA, CCA, CSA, EEA, ECPA, FAIR, FMFIA, FISA, GPRA, NII, NIIPA, NIST, PRA, Privacy Act, Telecommunications Act
PM	Program Management
PM COP	Program Management Community of Practice—cf. PM
PMLCCE	Program Manager's Life-Cycle Cost Estimate—cf. TCO
PMO	Program Management Office—cf. IASE, PM, PKI, TCO, X.509
POM	Program Objectives Memorandum—cf. Program
PPBS	Planning, Programming, and Budgeting System
PPI	Past Performance Information—cf. FASA
PPT	People, Processes, and Tools—cf. DII
PPTP	Point-to-Point Tunneling Protocol—cf. VPN
PRA	Paperwork Reduction Act
PRNG	Pseudo Random Number Generator—cf. WEP

PSYOP	PSYchological OPerations—cf. C ² W
PV	Present Value
QDR	Quadrennial Defense Review—cf. KS
Q. E. D.	Quad Erat Demonstrandum—cf. Output Measure(s)
RA	Registration Authority
RAID	Redundant Array of Independent Disks
RAM	Random Access Memory
RBA	Revolution in Business Affairs—cf. Process Improvement
RBE	Rice Bowl Engineering—cf. Process Improvement
RDB	Relational DataBase—cf. DB
RDS	Reference Data Sets—cf. ShADE
RF	Radio Frequency—cf. Blue Tooth , DSSS, FHSS, Home RF
RFP	Request For Proposal—cf. FSS
RMI	Remote Method Invocation—cf. Java
ROI	Return On Investment
ROLAP	Relational OnLine Analytical Processing —cf. Data Mart , OLAP
ROM	Read-Only Memory
RPD	Recognition-Primed Decision
RSA	Rivest, Shamir, and Adleman—cf. PGP, public key cryptosystems, WEP
RSI	Rationalization, Standardization, and Interoperability—cf. Common
RUP	Rational Unified Process
SA	Systems Architecture
SABI	Secret And Below Interoperability—see IASE
SAM301	Advanced Software Acquisition Management—IRMC Course
SANS	System Administration, Networking and Security
SBU	Sensitive But Unclassified
SCADA	Supervisory Control And Data Acquisition
S/C/E	Select/Control/Evaluate—cf. Portfolio Management
SCE	Supply Chain Execution—cf. SRM
SCP	Supply Chain Planning—cf. SRM
SCSCG	Smart Card Senior Coordinating Group
SCSI	Small Computer Systems Interface
SEC	Managing Networked Security in a Networked Environment—IRMC Course
SECDEF	Secretary of Defense—cf. Benchmarking , CIO, DRI, DIAP, FISA, NII
SEE	Significant Emotional Experience—cf. SRM
SEI	Software Engineering Institute
SEP	Systems Engineering Procedures—cf. Systems Engineering
SET	Secure Electronic Transaction or Transfer
SE&I	Systems Engineering and Integration—cf. Interoperability
SGML	Standard Generalized Markup Language
ShADE	Shared Data Engineering
SIDR	Secure Intelligence Data Repository—cf. Data Dictionary
SIG	Special Interest Group—cf. Data Dictionary , Blue Tooth

SJ	Sensate Judgmental—cf. Strategic Thinking
SLA	Service Level Agreement
SME	Subject Matter Expert—cf. Best Practices, Face Validity, Mavens
S/MIME	Secure/Multipurpose Internet Mail Extensions —see MIME
SMG	Secure Network Server Mail Guard—cf. MLS
SNA	Social Network Analysis
SNS	Secure Network Server—cf. MLS
SOAP	Simple Object Access Protocol
SOE	Standard Operating Environment
SOP	Standard Operating Procedure—cf. IAM
SPAWAR	SPAce and naval WARfare systems command—cf. BRAC, Best Practices, Brain Drain, Portal, PM, S/W, Quality, SSC-CH, SYSCOM, Systems Engineering
SPI	Schedule Performance Index—cf. EVM, PKEnable
SPMN	Software Program Managers' Network—cf. S/W, Quality
SPO	Senior Privacy Officer
SPOF	Single Point Of Failure
SQL	Structured Query Language
SRM	Supplier Relationship Management
SSA	System Security Administrator—cf. Systems Management
SSAA	System Security Authorization Agreement
SSAC	Source Selection Advisory Council—cf. Central Tendency
SSC-CH	SPAWAR Systems Center CHarleston—cf. Knowledge repositories, tacit knowledge
SSEB	Source Selection Evaluation Board—cf. Central Tendency
SSL	Secure Sockets Layer
SSO	System Support Office
SSP	System Security Plan—cf. IAM
STRG	Software Technology Reference Guide—cf. SEI
ST&E	Security Test and Evaluation—see DITSCAP, IASE
S/W	SoftWare
SWAP	Shared Wireless Access Protocol—cf. Home RF
SYSCOM	SYStems COMmand (e.g., NAVAIR, NAVSEA, SPAWAR)—cf. Acronym
S&T	Science and Technology—cf. Balanced Scorecard, Cybrarian
TA	Technical Architecture
TADIL	TActical Digital Information Link—cf. IERs
TAFIM	Technical Architecture Framework for Information Management—cf. COE, JTA, TA
TCL	Tool Command Language—cf. Webification
TCO	Total Cost of Ownership
TCP	Transmission Control Protocol
TCSEC	Trusted Computing System Evaluation Criteria
TDA	Technical Development Activity—cf. CDA
TDL	Technical Discipline Leader—cf. Domain, Knowledge Network

TDL	Tactical Data Link—cf. IERs
TDMA	Time Division Multiple Access—cf. AMPS, CDMA, EDGE, GSM
TEAS	Trademark Electronic Application System—cf. e-Gov
TECHEVAL	TECHnical EVALuation—cf. Beta Testing
TFW	Task Force Web—cf. Application
TMS	Technical Management Support—cf. DAWPDP
TNT	Tacit kNowledge Transfer
TOC	Total Ownership Cost—see TCO, ESI
TQL	Total Quality Leadership—cf. Feedback, Process Improvement, TQM
TQM	Total Quality Management—cf. AR, Change Management, Process Improvement, TQL
TTP	Trusted Third Party—cf. CA, PKI)
T&E	Test and Evaluation—cf. DITSCAP, IASE
UCITA	Uniform Computer Information Transactions Act
UCL	Upper Control Limit—cf. change management
UML	Unified Modeling Language
UPS	Uninterruptible Power Supply
USA	United States Army—cf. Components, Services
USAF	United States Air Force—cf. Components, Information Superiority, Services, S/W, Systems Engineering, VR
USCG	United States Coast Guard—cf. Services
USG	United States Government—cf. CFHA, Departments, Services
USN	United States Navy—cf. Components, Services
USPS	United States Postal Service—cf. DSS
URL	Uniform Resource Locator
VAN	Value-Added Network
VANs	Voice Application Networks
VONAPP	Veterans ON line APPlications—cf. GPEA
VPN	Virtual Private Network
VPPA	Video Privacy Protection Act
VR	Virtual Reality
VTC	Video TeleConferencing
VVD	Voice, Video, and Data
WAN	Wide Area Network
WAP	Wireless Application Protocol
WC	Wearable Computer
WDM	Wavelength Division Multiplexing—cf. DWDM, Multiplexing
WEP	Wireless Equivalent Privacy
WIPT	Working Integrated Product (or Process) Team —cf. IPT
WMD	Weapons of Mass Destruction—cf. Cyberlaw
WML	Wireless Markup Language
WOM	Write Only Memory—cf. CD
WSCID	Weapon Systems Control Interface Drawings—cf. Interface
WTLS	Wireless Transport Layer Security

WWW	World Wide Web
XML	eXtensible Markup Language
YGIAGAM	Your Guess Is As Good As Mine—cf. Key Pair
1G	first Generation
3PL	third Party Logistics—cf. SRM
4 A's	four A's (Adaptability, Accountability, Alignment And Awareness)
508	see Section 508

A

Accessible Population

The total number of cases for which it is conceivable to collect data (IRMC Measuring Results of Organizational Performance Course).

To the Sufi, perhaps the greatest absurdity in life is the way in which people strive for things—such as knowledge—without the basic equipment for acquiring them. They have assumed that all they need is “two eyes and a mouth,” as Nasrudin says. In Sufism, a person cannot learn until he is in a state in which he can perceive what he is learning, and what it means ... This is why Sufis do not speak about profound things to people who are not prepared to cultivate the power of learning—something which can only be taught by a teacher to someone who is sufficiently enlightened to say: “Teach me how to learn.” There is a Sufi saying: “Ignorance is pride, and pride is ignorance. The man who says ‘I don’t have to be taught how to learn’ is proud and ignorant.” (Idries Shah, “First Things First,” *The Exploits of the Incomparable Mulla Nasrudin*, Octagon Press, London, 1983, p. 29.)

Access Point (AP)—see Basic Service Set, Extended Service Set

A device used in wireless local area networks (LANs) that provides the wireless connection between workstations and the LAN distribution system. APs use shared-key (symmetrical) encryption and challenge-response authentication for user logon. Unauthorized (rogue) APs are a major threat. red team “war driving” can detect such security breaches (IRMC Managing Networked Security in a Networked Environment Course).

As long as you depend on the statistical aggregates we call information, you’ll know a good deal about your product, a good deal about your services, and not a blessed thing about your customers. (Peter Drucker, quoted by Downes and Mui in *The Killer*, p. 79.)

Acquisition

One of the 10 federal chief information officer (CIO) competencies, specified by the Federal CIO Council Executive Board, included in the IRMC’s curriculum for the CIO certificate. Acquisition is the process or discipline of acquiring products and services; it includes generation or research and development, commercial purchase or production, and even disposal of obsolete items. In addition to IT acquisition (as addressed by IRMC and the National Defense University), acquisition (per se) is addressed more generally (including military hardware and national security systems, for instance) under the Defense Acquisition Workforce Improvement Act (DAWIA) and at the Defense Systems Management College. The DAWIA communications/computers competency area relates directly to IT and can complement CIO training. Advanced Information System Acquisition Course (see IRMC) can be credited to both programs. The Information Technology Management Reform Act and the Clinger-Cohen Act had a major impact on IT acquisition, emphasizing new, faster ways to acquire IT, and established the Federal Acquisition Regulatory Council (FARC) chartered to simplify the process, use risk management, promote incremental and multiple award acquisition, and use commercial IT (IRMC New World of the CIO Course). Software has become a major (perhaps, the

major) aspect of acquisition, and the Capability Maturity Model has been extended to include software acquisition.

Software Acquisition Capability Maturity Model^a

Level	Focus	Key Process Areas (KPA's)
5. Optimizing	Continuous process improvement	Acquisition innovation management Continuous process improvement
4. Quantitative	Quantitative management	Quantitative process management Quantitative acquisition management
3. Defined	Acquisition processes and organizational support	Process definition and maintenance Project performance management Contract performance management Acquisition risk management Training program
2. Repeatable	Project management processes	Software acquisition planning Solicitation Requirements development and management Project management Evaluation Transition to support
1. Initial	Competent people and heroics	None

a. IRMC Advanced Software Acquisition Management Course.

Defense Acquisition Deskbook: <http://web1.deskbook.osd.mil>

Defense Acquisition University: <https://dau1.fedworld.gov> (virtual campus)

Acquisition History Project: <http://www.army.mil/cmh-pg/acquisition/acqhome.htm>

Army Acquisition Corps: <http://dacm.rdaisa.army.mil> and <http://acqnet.saalt.army.mil>

Air Force Acquisition: <http://www.safaq.hq.af.mil>

Navy Acquisition and Business Management: <http://www.abm.rda.hq.navy.mil>

Defense Systems Management College: <http://www.dsmc.dau.mil> (DAWIA courses)

Federal Acquisition Institute (FAI): <http://www.faionline.com>

Federal Acquisition Jump Station (NASA): <http://nais.nasa.gov/fedproc/home.html>.

From a differing perspective, however:

"Suboptimal" Divisions. A \$6-billion organization we encountered some years ago had organized technical groups into "competency centers"—physics, chemistry, etc. These centers had become the primary organizational elements. Projects and products ranked a distant second. The practical outcome of the imbalance was that an individual's time was hopelessly fragmented. Any person might work on as many as a half-dozen projects associated with his narrow specialty. The projects might, in turn, span three or four divisions, two or three groups. The organization was a disaster. Very little was delivered on time—principally, in our view, because of a lack of commitment and a focus on the wrong things, technical disciplines rather than products, projects, and customers. When the organization retuned, after a five-year hiatus, to a project mode (with technical competency

relegated to a distant second), development activities picked up noticeably—and almost overnight. (Thomas J. Peters and Robert H. Waterman Jr., *In Search of Excellence*, Warner Books, New York, 1982, p. 214.)

Acquisition Reform (AR) <http://www.acq.osd.mil/ar/ar.htm> and <http://www.ar.navy.mil>

1) Generically, attempts have been made to reform the government (especially the Department of Defense [DoD]) acquisition process many, many times. These include: 1949 Hoover Commission, 1953 second Hoover Commission, 1969 Fitzhugh Commission, 1972 Commission of Government Procurement, 1981 Carlucci Initiatives, 1982 Grace Commission, 1986 Packard Commission, 1989 Defense Management Review, and more. One can also include the introduction of total quality management or leadership à la W. Edwards Deming. Most of these major efforts did not, however, address cultural change (except, perhaps, total quality management). Nor were they supported by parallel environmental and cultural changes in society. It must be understood that government acquisition and procurement have always (by design) given first priority to social and political considerations versus efficiency and cost-effectiveness.

“Fair” (or perceived “equitable”) procurement took precedence over saving money. Also, the system was skewed to support social programs such as small business and disadvantaged social groups and sections of the nation. Furthermore, under prior theories of management and supervision, the overall integrity of workers and the use of risk analysis were downplayed or ignored. When a problem was detected, the bureaucratic solution was to add more rules, whether needed or cost-effective or not—to address the completely risk-averse mentality prevalent at the time. As has been said many times, anyone can say no, but no one can say yes. Of course, statistics tells us that there will always be “bad” happenings or occurrences. Most of them are simply part of the process.

Changing the system in response to them is folly and poor management. W. Edwards Deming’s methods spoke directly to this systemic political problem. It actually stems from the completely erroneous worldview based upon discrete occurrences and linear thinking versus the realities of statistics and systems or nonlinear thinking.

2) More recently, under the auspices of P. G. Kaminski and J. S. Gansler (as each assumed the position of Under Secretary of Defense for Acquisition and Technology, DoD acquisition executive [DAE]), AR has been used to indicate the set of initiatives moving DoD towards commercialization. This set of initiatives deleted virtually all DoD and MILDEP specifications and standards—to be replaced by industry standards. Emphasis was shifted from design specifications to performance specifications; electronic data interchange was emphasized; empowerment and risk management were enhanced. Courses were taught to all DoD employees by other DoD employees, and AR offices were created at OSD and the MILDEPs. A concerted effort was made toward cultural change in DoD as well as reengineering so as to destroy the old processes such that they could not be reincarnated. Many of the 33 recommendations of the Oversight and Reporting Process Action Team (an independent body commissioned by the DAE) were also adopted. These changes paralleled the rapid rise and spread of IT throughout industry and government. Congress has been at the forefront of AR. Legislation includes the Clinger-Cohen Act, the Federal Acquisition Reform Act, Federal Acquisition Streamlining Act, Federal Activities

Inventory Reform Act, and various defense authorization acts. Bert Concklin, president of the Professional Services Council, has been quoted as saying "The DoD in general, while not perfect, is much more attentive to business management and business process efficiency than most civilian agencies" (Katherine M. Peters, *Government Executive*, 1999, May). See "Managerial Accountability" (Elliott Jaques, *Journal for Quality and Participation*, 1992, March).

Acquisition Reform Network (ARNET): <http://www.arnet.gov/>

I will go anywhere provided it is forward. (D. Livingstone, quoted by Lawrence J. Peter in *The Peter Prescription*, William Morrow & Co., New York, 1972, p. 14.)

Acronym

A pseudo-word or abbreviated form of a phrase name of an entity, organization, or other concept generally formed from the first letter of each word in the phrase in the same order as in the phrase. Acronyms should normally be capitalized (see parentheses following the titles of the entries in this document). For example, acquisition reform has the acronym "AR." Some acronym creators attempt to create acronyms in the form of actual words or easily pronounced terms. To do so, they sometimes use more than one letter of particular words in the phrases from which the specific acronym is formed. For instance, analysis of variance takes the first two letters of analysis and the last two letters of variance in order to form its acronym ANOVA. When using an acronym in a document, one should spell out the phrase initially followed by the acronym within parentheses. Thereafter, the acronym can be used in lieu of the phrase. It may be preferable, in a lengthy document, to spell it out for each chapter. Alternately, an acronym list can be attached at the beginning of the document or in an appendix or attachment at the end of the document. Acronyms are not the same as abbreviations. In the government, many abbreviations are formed from the first syllable of each word in a phrase, sometimes disregarding the end of the phrase (especially if it is a much-used, replicated word or words). Thus, the Naval Sea Systems Command is abbreviated (entirely/officially) as NAVSEASYS COM and (further/informally) as NAVSEA (since there are several SYSCOMs). There are numbers of acronym lists on the Web: AFCEA's SIGNAL Magazine: <http://www.us.net/signal/Acronyms/AcronymsE.html>; which contains more than 4,000 Information Age acronyms; Force XXI acronyms page;

DoD IT Acronym List: <http://www.dacs.dtic.mil/topics/acronym/acronyms.shtml>

Navy Acquisition, Research, and Development Information Center:
<http://nardic.onr.navy.mil>.

A proverb is a short sentence based on long experience. (Miguel de Cervantes, quoted by Jacob M. Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 315.)

Activation or Arousal Theory—see Level of Abstraction and Time Horizon

A theory in behavioral psychology that indicates that a person's output is normally distributed in relation to his or her input (activation, arousal, or stimulation). Thus, if a person is at rest, he or she has no output. As stimulation begins, output goes up, but at the

“characteristic point” (peculiar to the particular person) the slope changes and output goes down as input increases. In other words, a person who is either under-utilized or over-utilized produces less than when optimally utilized or stimulated. Activation theory has had many useful applications in marketing and other arenas. It is not a conscious phenomenon and so unconscious indicators (such as pupil dilation of the human eye) have been developed to ascertain levels of stimulation. It also led to the empirical conclusion that light physical exercise increases scores on mental tests immediately following the exercise, but heavy physical exercise decreases these scores. Activation theory has many applications and implications in supervision and management in today’s enterprises. It complements the works of such diverse management scientists as Ken Blanchard (situational leadership) and Elliot Jaques (time-horizon). See my article in the *Acquisition Review Quarterly* <http://www.dsmc.dsm.mil/pubs/arq/2000arq/pollock.pdf>.

Not to be able to work at full capacity is restrictive, depressing, and finally persecuting. The avoidance of work at full capacity, or the acceptance of underemployment, is symptomatic of emotional disturbance. (Elliot Jaques, *Creativity and Work*, International Universities Press, Madison, CT, 1990, p. 36.)

Active X—see Mobile Code and Webification

Active X is a form of mobile code developed by Microsoft. It evolved from object linking and embedding (OLE), and it allows a program to use Microsoft’s component object model (COM) to communicate with other programs. It enables many attractive Web site displays. However, it poses considerable security vulnerabilities and, therefore, is prohibited by many local area network administrators and Web masters. Java is its Sun Microsystems competitor software. On November 7, 2000, the Assistant Secretary of Defense (Command, Control, Communications and Intelligence), the Department of Defense Chief Information Office, issued the *Policy Guidance for Use of Mobile Code Technologies*. For a demo, see <http://www.download.com/PC/ActiveX/> (IRMC Data Management Strategies and Technologies Course). ActiveX: <http://www.microsoft.com/com/tech/activex.asp> www.whatis.com.

We have met the enemy and they is us. (Pogo, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 82.)

Activity-Based Costing (ABC)

A methodology that measures the cost and performance of activities, resources, and cost objects. Resources are traced to activities that are then assigned to the business process that consumes them. This information allows one to identify which activities contribute to customers’ needs and to eliminate activities that don’t. It also allows one to identify cost drivers within each process. (Defense Logistics Agency, *Performance Plan for Fiscal Year 1996*, p. A-2) [IRMC Measuring Results of Organizational Performance Course].)

All mankind is divided into three classes: those that are immovable, those that are movable, and those that move. (Benjamin Franklin, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 15.)

Agency

Any executive department, military department (MILDEP), government corporation, government controlled corporation, or other establishment in the executive branch of the federal government or any independent regulatory agency. Within the Executive Office of the President, the term includes only the Office of Management and Budget (OMB) and the Office of Administration (*OMB Circular A-130*) (IRMC Data Management Strategies and Technologies Course).

All of us are agents of history, playing out our roles, shifting or failing to shift according to its tides. (M. Scott Peck, *Further Along the Road Less Traveled*, Simon & Schuster, New York, 1993, p. 232.)

Alt Tag

A popup displayed on a computer screen when the mouse cursor is placed over and remains over an image or word (such as on a Web site). The alt tag explains the meaning of the image the cursor is placed upon, not just a description of it. Alt tags are useful components in achieving legal compliance with the Americans with Disabilities Act. See Section 508.

The phenomenon of our being unable to see plain truth is of course not limited to storytelling. It happens frequently in our lives that we miss something obvious and fundamental that is staring us plainly in the face. We are unwilling to admit the obvious. We reject the advice of our colleagues and friends. We pay experts lots of money to tell us the self-evident. We spend time with therapists to help us to grasp what is apparent to everyone around us. And yet often we still fail to see what is screaming for our attention. (Stephen Denning, *The Springboard*, Butterworth-Heinemann, Boston, 2001, p. 162.)

American National Standards Institute (ANSI)

An independent, nonprofit standards organization that established standards for computer keyboard alphanumeric codes, personal identification numbers, and many other items. It is located at 1430 Broadway, New York, NY.

Just another chicken story ... True story? Sometimes it does take a rocket scientist: Scientists at NASA built a gun specifically to launch dead chickens at the windshields of airliners, military jets, and the space shuttle, all traveling at maximum velocity. The idea was to simulate the frequent incidents of collisions with airborne fowl to test the strength of the windshields. British engineers heard about the gun and were eager to test it on the windshields of their new high-speed trains. Arrangements were made, and a gun was sent to the British engineers. When the gun was fired, the engineers stood shocked as the chicken hurtled out of the barrel, crashed into the shatterproof shield, smashed it to smithereens, blasted through the control console, snapped the engineer's backrest in two, and embedded itself in the back wall of the cabin, like an arrow shot from a bow. The horrified Brits sent NASA the disastrous results of the experiment, along with the designs of the windshield, and begged the U.S. scientists for suggestions. NASA responded with a one-line memo: "Thaw the chicken." (Received by author via Internet e-mail; an Urban Legend. See <http://www.snopes2.com/> which also references: Looker, Mark. "A Tale of the Frozen Chicken and the Internet." *Feathers Newsletter*. October 1996 (Communications Corner) and Looker, Mark. "Frozen Chicken Cannon: Myth or Reality?" *Feathers Newsletter*. August 1997 (Communications Corner].)

Analogic Thinking

Thinking in terms of analogies. Analogic thinking is especially effective in communications with other people, for transferring implicit knowledge and wisdom, and in tapping into the potentials of unconscious processes.

Equally important to knowledge brokers, however, is that analogies allow them to move knowledge from one context to another. The knowledge may be tacit (such as the needs of doctors performing surgery) or it may be explicit (such as the performance requirements of a toy squirt gun), but it is always context-specific. Analogic thinking creates new knowledge by removing it from one context and placing it in another. The search for new solutions to problems needs to take place in ways that allow, even encourage, unexpected analogic connections to happen. (Andrew B. Hargadon, "Firms as Knowledge Brokers: Lessons in Pursuing Continuous Innovation," *California Management Review*, Berkeley, CA, Spring 1998, Vol. 40, Issue 3, Spring, pp. 209-227.)

Analog Mobile Phone Service (AMPS)

Bell Labs developed this wireless protocol, originally for mobile phones, in the 1970s. It is based on frequency division multiple access (FDMA); supports (theoretically) 416 full-duplex conversations; operates at 800 MHz; and has 14.4 kbps data rate. This is 25 percent of the present 56 kbps modem rate. The digital version is digital advanced mobile phone service (D-AMPS) that is based on TDMA; divides AMPS radio channels into six time slots (increasing capacity by a factor of three); is dual band; operates at 800/1900 MHz; and has data rates of 14.4/43.2 kbps. D-AMPS provided the personal communications services (PCS) cell phone system. The higher data rate is three times as great as AMPS (IRMC Managing Networked Security in a Networked Environment Course).

If everybody thought before they spoke, the silence would be deafening. (Gerald Barzan. in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 244.)

ANalysis Of VAriance (ANOVA)

"A statistical technique that can determine whether the scores for one group of cases is different than another group of cases after the values of other related variables are statistically controlled" (IRMC Measuring Results of Organizational Performance Course). ANOVA is a form of factor analysis. It is used to analyze a nonlinear situation (having more than one variable) in order to determine the contributions of the various factors toward the statistical findings. In other words, it tells you how and whether a particular variable or environmental condition affected the outcome. For example, it was widely reported that lowering the speed limit to 55 mph saved many lives. But an ANOVA performed on the statistics might show that the lives saved were mostly due to people driving fewer miles (when gasoline became more expensive).

Problems cannot be solved at the same level of consciousness that created them. (Albert Einstein, quoted in Paul Smith's NAVSEA pitch: *Enterprise Transformation Challenge, Successes, and the Future*.)

Analytical Hierarchy Process (AHP)

A process for organizing and assessing alternatives against a hierarchy of multifaceted objectives (IRMC Measuring Results of Organizational Performance Course).

A man should never be ashamed to own he has been in the wrong, which is but saying, in other words, that he is wiser today than he was yesterday. (Alexander Pope, *Thoughts on Various Subjects*, quoted in the *Rosicrucian Digest*, 1974, February, p. 42.)

Anti-terrorism Act of 1966, P. L. 104-132

Secretary of State designates terrorist organizations, which triggers prohibitions on fundraising, freezing of assets, and travel by members; establishes special court to hear actions for removal of aliens from the United States; changes federal judicial procedures to limit times and venues for habeas corpus; permits use of unrevealed classified sources in camera decision by a single judge. See Presidential Decision Directive 62 (PDD-62) *Combating Terrorism* (May 22, 1998, <http://www.fas.org/irp/offdocs/pdd-62.htm>), and *U.S. Policy on Counter-terrorism* (1995 or 1996, PDD-39) (IRMC Assuring the Information Infrastructure Course).

Crime expands according to our willingness to put up with it. (Barry Farber, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 62.)

Application or Application Program

An application (short for application program) is a computer program designed to perform a specific type of function to users or, other application. Word processors, database programs, Web browsers, and spreadsheets are examples of application types. Microsoft Word is a specific application. Applications normally run under a computer's operating system. Applications (feeware) may be licensed (out-of-the-box purchase), leased (via an active service page, or ASP), or individually developed (in-house or under contract). They may be resident on a specific computer (such as a laptop or notebook) or shared via a local area network server. If shared, the purchaser will contract with the supplier for the number of seats/licenses to be supplied. Shareware are applications or knowledge, information, and data (KID) provided at no immediate cost to the user, but often users are requested to send nominal amounts of funds to the developer. This is usually done via the honor system.

Applications in development may be provided free to users for specified periods in order to obtain comments from the initial users or Beta testers. Similarly, service providers (e.g., ASPs) may provide free trial periods to prospective users. Freeware, however, is provided free to all users. Applications are subject to archetypal polarity stresses: centralized versus decentralized control, off-the-shelf versus tailored, etc. For example, the Navy/Marine Corps Intranet (NMCI) establishes the possibility of the seat management contractor maintaining Navy-provided applications that would then be available to virtually all users of NMCI. Furthermore, Task Force Web (TFW) was created to "webify" the Navy. These developments have highlighted the vast number of existing, special applications. Many of these applications are largely redundant in their operations and results. Thus, the Navy Department is actively analyzing its entire application set in

order to reduce their numbers. Otherwise the twin objectives of webification and utilizing NMCI would not be affordable. The upside of this exercise lies not only in the advantages of standardization (and the possibility of integrating lessons learned) but also in reduced software maintenance costs resulting from a reduced application set.

The secret of worthy achievement is to play the game better today than we played it yesterday. (W. H. Clark, "The Mystic in Time and Space," *Rosicrucian Digest*, 1973, Vol. LI, No. 9, p. 33.)

Application Programming Interface (API)

A methodology whereby a software application provider retains the product until a subscriber accesses it (usually over the Internet) and charges the customer on a pay-per-use basis. It could be considered a thin-client type approach. The open database connectivity (ODBC) was originated by Microsoft but is now an open standard. It requires a separate module or driver for each database to be accessed. It uses structured query language (SQL). Alternatively, the object linking and embedding database (OLE DB) offers universal data integration over an enterprise's network (mainframe to desktop) regardless of data type (not restricted to SQL). Can use spreadsheets, e-mail, etc. See <http://www.microsoft.com/data/oledb/prodinfo.htm> (IRMC Data Management Strategies and Technologies Course).

Change ideas will only have resonance for us if they respond to our own preoccupations, doubts, hopes, and fears. (Stephen Denning, *The Springboard*, Butterworth-Heinemann, Boston, 2001, p. 194.)

Application Service Provider (ASP)

An ASP is a company that provides businesses with access to application programs via the Internet. The application resides on the ASP's site, and the user organization pays a license fee or other form of usage charge (number of users, amount of time used, etc.). This is a form of fee for service similar to pay-per-view television. Tradeoffs are similar to buy/lease or build/buy business decisions. They are, therefore, amenable to decision theory solutions. Response times, user locations, and versioning are important considerations.

A journey of a thousand miles must begin with a single step. (Lao Tzu, *The Way of Lao Tzu*, p. 64, quoted by John Bartlett in *Familiar Quotations*; Little, Brown & Co., Boston, 1968, p. 74b.)

Architecture—see Architecture Framework

1) The art, science, and process of designing, building, or constructing a product or resulting structure of that process. Architects originally and literally designed buildings, bridges, etc., in conjunction with mechanical engineers, etc. With the advent of computers and systems engineers, systems designers create systems architectures. In a metaphorical sense, architecture may be conceptual in nature—one can be the architect of one's success or of a military victory.

2) Each federal agency has been required to create an overall architecture for its IT. These vary widely in type, number of components, etc. The Department of Defense submitted (as required) a three-level or view architecture consisting of operational, systems, and technical views of components, their relationships, and the principles and guidelines governing their design and evolution over time. Its three major perspectives are defined in DoD's Command, Control, Communications, Computer, and Intelligence (C⁴I) Architecture Framework. See also the C⁴I Support Plans (C⁴ISP).

3) A set of modules or components, a map depicting how they are connected, and a set of interaction rules between them.

4) The structure of the components of a program or system, their interrelationships, principles, and guidelines governing their design and evolution over time (IRMC Advanced Software Acquisition Management Course).

Certain people make history and others build a house in the suburbs. (C. G. Jung, *Analytical Psychology, its Theory and Practice*, Pantheon Books (Random House), New York, 1968, p. 143.)

Architecture Framework

An architecture framework provides a consistent means of documenting the enterprise IT architecture. The formal Department of Defense (DoD) architecture framework specifies graphical and textual formats (and terminology) for capturing information flow, data formats, systems connectivity, and technical standards. The DoD architecture framework specifies products to support three separate, but interrelated views of the architecture:

1) Operational: a description of the tasks and activities, operational nodes, and information exchange requirements between nodes. The operational view is technology-independent.

2) Systems: a graphical and textual description of systems and interconnections used to satisfy the operational needs described in the operational view.

3) Technical: the minimal set of rules governing the arrangement, interaction, and interdependence of system parts or elements (see C⁴ISR Architecture Framework). These three have previously been referred to as architectures, but actually they (except for the systems architecture) are not actually architectures. The Joint Technical Architecture (JTA), for instance, resembles a replacement for the DoDISS (a now-obsolete list of DoD instructions and standards) and is not an architecture at all, but merely a structured list of allowable requirements documents and specifications. Thus, DoD has revised its terminology, referring to the three as "views." However, in a more generic sense, a framework is an architecture without its defining rules set. The components of an architecture or framework may be described in a technical reference model (TRM) (IRMC New World of the CIO Course).

Only childish people imagine that the world is what we think it is. The image of the world is a projection of the world of the self, as the latter is an introjection of the world. (C. G. Jung, *Analytical Psychology, Its Theory and Practice*, Pantheon Books (Random House), New York, 1968, p. 66.)

Architectures and Infrastructures—see Architecture and Architecture Framework

One of the 10 federal chief information officer (CIO) competencies, specified by the Federal CIO Council Executive Board, included in the IRMC's curriculum for the CIO certificate. An information technology architecture (ITA), according to the Clinger-Cohen Act, is "an integrated framework for evolving or maintaining existing IT to achieve the agency's strategic goals and [information resource management] goals." An adequate ITA aligns IT processes with agency mission and goals; proves interoperability, redundancy, and security; and applies standard evaluation measures. Architectures focus on work processes, information flows, and standards. They employ technology as an enabler, not a process driver. The developer's assumptions in creating commercial products must be considered when creating a systems architecture; there are important intangible aspects to products. In addition to the DoD architecture, described under architecture and architecture framework, others have delineated many-layered architecture models including: enterprise, operational, functional or information, technical, system or physical, hardware, and software architectures (IRMC New World of the CIO Course and Advanced Software Acquisition Management Course).

The cruel thing about life is that it has the nasty habit of twisting what was meant to be into what is. (*Nash Bridges* [actor Don Johnson], television show.)

Artificial Intelligence (AI)

Computer techniques (usually via software) that attempt to solve problems without human intervention. Such techniques include: expert systems, neural networks, case-based reasoning, intelligent agents, and genetic algorithms (IRMC New World of the CIO Course). See Neurosciences: Dana Alliance for Brain Initiatives: <http://www.dana.org/brainweb>.

The important thing is this: to be able at any moment to sacrifice what we are for what we could become. (Charles du Bois, poster.)

Assumptions—see Vision

Preconceptions of reality. They are unproven "givens." In geometry, they are stated up front (explicitly) prior to beginning a "proof." Most assumptions, however, are implicit or tacit. Unshared assumptions cause communications problems. Shared assumptions (e.g., organizational vision or mission) create teamwork. It has been said that unreality is created when a person forms an explicit conclusion about reality and turns it into an implicit assumption about reality. Essentially, this process is the assumption of linearity. A particular case or instance (discrete occurrence(s)) is generalized and internalized by an individual so as to affect his or her worldview or mindset. Such occurrences are usually not statistically significant and may be quite false. Superstitions, stereotypes, and most prejudices are examples of this process.

Organizations have assumptions about their environment, mission, and core competencies that should fit reality as well as one another. In other words, they should be both internally and externally consistent. They should be tested continually (reality checked), especially in a rapidly changing environment. Peter Drucker, in "Theory of Business" (*Harvard Business Review*, 1994, September-October, 94506), suggests that one

study noncustomers to determine signs of change—to be market-driven, not just customer-driven. Furthermore, both unexpected failure and unexpected success are signs that one's theory of business (assumptions) is out of date. Marcel Proust said "The real act of discovery consists not in finding new lands but in seeing with new eyes" (IRMC Leadership for the 21st Century Course). Organizations should consider the prevalence and applicability of the business and marketing life cycles (which resemble sine or cosine waves and the normal distribution. They should also consider Thomas Kuhn's classic work *The Structure of Scientific Revolutions*, in which he described paradigms and paradigm shifts as well as his statement that, "I'm much fonder of my critics than my fans" (quoted by James Pinkerton in "Paradigm Lost: Thomas Kuhn Shifted the Ideas of Many a Work," *The Washington Post*, 1996, June 21) (IRMC Leadership for the 21st Century Course).

People unhesitatingly project their own assumptions about others on to the persons concerned and hate or love them accordingly. (C. G. Jung, *The Structure and Dynamics of the Psyche*, CW8, Pantheon Books, New York, 1960, p. 308.)

I know it as much as anyone knows anything. Knowledge is just opinion that you trust enough to act upon. (Orson Scott Card, *Children of the Mind*, Tom Doherty Books, New York, 1996, pp. 113–114.)

Asymmetric Cryptography

A type of cryptography in which two different keys are used for encryption and decryption respectively. Pretty good privacy and public key infrastructure (PKI) use asymmetric cryptography. PKI's use of a public key allows people without a preexisting security arrangement to exchange messages securely. Symmetric cryptography does not allow this. See cryptography and encryption.

Never answer an anonymous letter. (Yogi Berra, *The Yogi Book*, Workman Publications, New York, 1998, p. 93.)

Asymmetric Dominance

A psychological factor considered in utility theory (part of decision theory) that disallows comparisons of outcomes using simple mathematics—dollars or funds—because people do not value dollars in a constant manner. It is analogous to the fact that people do not experience time in a constant manner—to people time is subjective, not objective.

An interesting and important instance of this phenomenon is the case of the "attraction" or "asymmetric dominance effect," which has received a good deal of attention in the decision-making and marketing literature. Given a group of objects, an asymmetrically dominated alternative is dominated by at least one of the other alternatives but not by another. However, assume the product category is "stereo cassette recorders" and that competing objects are distinguished by the two attributes of "sound quality" and "reliability." Brand A has a sound quality rating of 65 and a reliability rating of 90, while brand B has a sound quality rating of 90 and a reliability rating of 65. A consumer prefers B to A (presumably because the customer values reliability more than sound quality). Suppose a third object, C, is introduced with a sound quality rating of 60 and a reliability

rating of 85—in other words, C is dominated by A but not by B. It turns out, however, that if our consumer is typical, when confronted with the new set of choices, the customer now prefers A to B, a reversal of the previous preferences. The phenomenon—which is well known to retailers everywhere as evidenced by the way they arrange their product assortments on shelves—is an important example of how “knowers” use contextual properties of data to value information. (Rashi Glazer, “Measuring the Knower: Towards a Theory of Knowledge Equity,” *California Management Review*, Berkeley, CA, Spring 1998, Vol. 40, Issue 3, pp. 175–194.)

Asynchronous Transfer Mode (ATM)

ATM is a high-performance, cell-oriented, switching and multiplexing technology that uses fixed-length packets to carry different types of traffic. ATM can reduce infrastructure costs through efficient bandwidth management. The term asynchronous is usually used to describe communications in which data can be transmitted intermittently rather than in a steady stream. It is analogous to multiprocessing using computer interrupts whereby a program runs in order of priority when computer cycles (time slices) are available. With ATM, signal transmissions are not synchronized; transmissions are ad hoc versus prearranged in time, thus saving wait time between transmissions. Most computer transmissions (sending text to a printer, for instance) can occur at any time and at irregular intervals. Communication within a computer, however, is synchronous—to the degree that it is governed by the microprocessor clock. Computer operations (e.g., signal transmissions) can only occur only at specific points in the clock cycle (adapted from *Glossary of IM/IT & KM Terms*).

It is quite impossible that the noble organs of human speech could be replaced by ignoble, senseless metal. (Jean Bouillaud, member of the French Academy of Sciences, referring to Thomas Edison’s phonograph. (Christopher Cerf and Victor Navasky in *The Experts Speak*, Villard, NY, 1984, p. 226.)

Attribute

A property or characteristic of one or more entities; for example, color, weight, sex. Also a property inherent in an entity or associated with that entity for database purposes (DoD 8320.1-M, *Data Administration Procedures*) (IRMC Data Management Strategies and Technologies Course). Attributes form the essence of technical metadata that form the structure of databases. Data elements are the identifiers for data entities and attributes.

Malu isn’t stupid enough to think you can isolate facts from their context and have them still be true. (Orson Scott Card, *Children of the Mind*, Tom Doherty Books, New York, 1996, p. 163.)

Audit—see Federal Information Technology Security Assessment Manual (FISCAM)

An audit is a review and analysis of existing documentation and resulting processes, procedures, and operations. It is the first and lowest level of testing a system. Information security includes penetration tests as the intermediate level and red team attacks as the highest level. Audits are performed by various agencies within specific domains. Many people are familiar with Internal Revenue Service audits of individual tax returns (Form 1040). In the world of knowledge management and information technology, audits can be

done on each level of knowledge, information, and data or performed within a specific federal chief information officer (CIO) competency (as codified by the IRMC). Thus, an organization could perform a data, information, or knowledge audit. Alternately, it could perform an information assurance, policy, or capital investment audit. Audits can be very useful in assessing system changes and dynamics. An initial audit can establish a starting point or baseline prior to imposition of any proposed changes, for instance. Later audits can measure changes from the initial or baseline state and progress towards a pre stated goal(s). See the General Accounting Office's *Federal Information System Controls Audit Manual*, which provides guidance for evaluating general and application controls over the integrity, confidentiality, and availability of data maintained in computer-based information systems. FISCAM is the primary information security audit methodology. The National Institute for Standards and Technology has an extensive, complementary questionnaire (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

It is not pleasant to be treated like a clock by some clever but essentially unsympathetic person who wants to take you apart to see what makes you tick! (Robertson Davies, *One Half of Robertson Davies*, Viking Press, New York, 1977, p. 132.)

Authentication/Identification—see Passwords

The process of establishing the validity of a transmission, message, or originator, and verifying that the user is authorized to receive specific categories of information. Authentication is the final "A" in the information assurance acronym, CIANA (confidentiality, integrity, availability, nonrepudiation, and authentication), which itemizes the major factors in computer security. Dial-back modems require users to enter a username or password upon connection (via dial-up). The network modem then disconnects and looks up the authorized remote telephone number for the connecting user. It then dials the remote modem and re-establishes the connection. This procedure short-circuits hacker war-dialing; other approaches include Microsoft's challenge handshake authentication protocol (CHAP)—from <http://www.microsoft.com/technet/security/> or <http://www.microsoft.com/technet/default.asp> and search for CHAP (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

One went to the door of the Beloved and knocked.
A voice asked, "Who is there?"
He answered, "It is I."
The voice said, "There is no room for Me and Thee."
The door was shut.
After a year of solitude and deprivation he returned and knocked.
A voice from within asked, "Who is there?"
The man said, "It is thee."
The door was opened for him.
(Jalaluddin Rumi, quoted by Idries Shah in *The Sufis*, Anchor Books [Doubleday & Co.], Garden City, NY, 1971, p. 357)

Authenticode

Software that is signed by the originator. User protection is quite limited since the quality (lack of malicious embedded code) cannot be ascertained. It does not protect against viruses, bugs, etc. Both audit trails and the authenticode software itself are vulnerable to attacks (IRMC Managing Networked Security in a Networked Environment Course).

The truth is the only thing worth believing, isn't it? If you can know it ... but if you won't believe the truth, someone has to help you come up with plausible lies, don't they? (Orson Scott Card, *Children of the Mind*, Tom Doherty Books, New York, 1996, p. 157.)

Authoritative Sources

Approved repositories for data, information, and knowledge. They are used in many disciplines that apply their own rules and methods for authenticating the content of the accepted sources. Some (e.g., IRMC's Developing Enterprise Security Strategies, Guidelines, and Policies Course and journals such as the *Acquisition Review Quarterly*) require peer review by acknowledged discipline leaders in accordance with accepted, stated standards for that discipline. This peer review of centralized information, applications, etc., lends authority to the content. There are various examples of authoritative sourcing within KM. In a KM portal, a content management policy with embedded peer review(s) and stated standards "acts as the authoritative source of organizational knowledge." Without authoritative sourcing of content, knowledge workers cannot place trust in the knowledge object, thwarting knowledge generation and sharing (Kim Guenther, et al., "Knowledge Management: Benefits of Intranets," *Online*, 2001, Vol. 25, Issue No. 3, May-June [USA]).

Whether you trust somebody or distrust him has a lot more to do with the kind of person *you* are than the kind of person he is. (Orson Scott Card, *Shadow of the Hegemon*, Tom Doherty Associates, New York, 2000, p. 153.)

Automatic Speech Recognition (ASR)

The ability of a computer to recognize human speech (audio) directly so as to create a document (e.g., in Microsoft Word). ASR software packages match the user's sound waves against prerecorded phoneme sound patterns (similar to a dictionary of sounds). Accuracy has increased dramatically in recent years so as to be 95 percent accurate. With ASR, the user speaks out loud into a microphone and the computer types the words onto the screen. ASR does not translate the words, however, it merely transforms the sounds into words. Natural language processing (NLP) provides "understanding." ASR is analogous to data management versus NLP's information management. Highly accurate ASR packages are now available at minimal cost (under \$30).

<http://ai.iit.nrc.ca/subjects/Speech.html>; <http://www.dragonsys.com>;
<http://www.software.ibm.com/speech/>; (IRMC Critical Information Systems Technologies Course).

Speech ... is an invention of man's to prevent him from thinking. (Agatha Christie, *The ABC Murders*, Pocket Books, New York, 1974.)

Availability

1) Availability is represented by the first "A" in the information assurance acronym, CIANA (confidentiality, integrity, availability, nonrepudiation, and authentication), which itemizes the major factors in computer security. It refers to timely, reliable access to data and services for authorized users and includes the restoration of services after an interruption. Thus, it is related to critical infrastructure protection (CIP).

2) In weapon systems, availability refers to the percentage of time that a system is usable by operators (uptime and downtime). There are basically two types of availability, operational and inherent. They are frequently confused. Operational availability (A_o) is a function of the mean logistics delay time (MLDT), the mean time to repair (MTTR), and the mean time between failures (MTBF). These may be modified when faults (noncritical losses in abilities) are differentiated from critical mission failures. Since A_o depends on factors outside the control of system developers (i.e., MLDT), they attempt to optimize the inherent availability (A_i) of the system. A_i is calculated the same way as A_o but excludes the MLDT (equates it to 1 or 100 percent).

After President Coolidge issued his famous "I do not choose to run" statement, he was besieged by reporters seeking a more detailed statement. One more persistent than his fellows followed Mr. Coolidge to the door of his library. "Exactly why don't you want to be President again, Mr. Coolidge?" he asked. Coolidge turned and looked him squarely in the eye, "Because," he answered, "there's no chance for advancement." (Quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 17.)

A-11 (Preparation and Submission of Annual Budget Estimates)—see Clinger-Cohen Act

OMB Circular A-11, part 3, states that "the capital programming process is useful for all long-term investments in capital assets. Full analysis and management should be applied to capital assets (including major modifications or enhancements for existing systems) that meet the criteria for a 'major acquisition.'" "Major acquisitions are capital assets that require special management attention because of their importance to the agency mission; high development, operation, or maintenance costs; high risk; high return; or their significant role in the administration of agency programs, finances, property, or other resources." Capital assets are "land, structures, equipment, and intellectual property (including software) used by the federal government and have an estimated useful life of two years or more." "The cost of a capital asset is its full life-cycle costs, including all direct and indirect costs for planning, procurement, operations and maintenance, including service contracts, and disposal." OMB's *Capital Planning Guide* is part of A-11. It describes the "capital planning cycle" in detail, including the Department of Defense's planning and programming phases of the planning, programming, and budgeting system (PPBS). "Even though IT grows cheaper each year, we spend more on it each year" and according to *Fortune* magazine, "as of 1992, most of the capital investing being done in the United States is for IT" (IRMC New World of the CIO Course). See part 3, July 1997: <http://www.whitehouse.gov/omb/circulars/a11/cpgtoc.html>.

Any forecast is useful ... providing the forecaster does not believe it. (George Steiner, *Top Management Planning*, 1969, New York, MacMillan & Co., p. 223.)

A-76, August 4, 1983, *Performance of Commercial Activities*—see Defense Reform Initiative (DRI)

OMB Circular A-76 Outsourcing states the national policy that the government shall not compete with its citizens, so the government should rely on commercial sources for its needs. Outsourcing involves a competition between public and private sector entities. While contracting out involves hiring a private sector organization to do work for the government, outsourcing could be to another government activity or agency. For example, the Department of Agriculture had a software activity that bid and won Department of Defense (DoD) software development efforts. With both contracting out and outsourcing, DoD retains financial and managerial control. However, with privatization, these are shifted to the private sector along with the effort. The U.S. Post Office and Conrail are examples of privatization. A-76 addresses outsourcing versus privatization or contracting out.

The *OMB Circular A-76 Handbook*, revised in March 1996, explains how to conduct an A-76 study. It provides examples of commercial activities that can be performed by private industry. Most IT activities are included. But it does not assume that such activities should be performed outside the government. Rather, a solicitation is used to obtain the lowest cost to the government. Bidders can be from private industry or from government agencies (including other than the incumbent activity or agency). Thus, the three choices are: incumbent, contract, and interservice support agreements (ISSA) with another government activity. The incumbent's costs are based on a most efficient organization (MEO). Thus, the incumbent can reorganize into a MEO to be more competitive. If the incumbent wins the competition, it must become the MEO even if this requires a reduction in force (RIF) reorganization, etc. The MEO must be realistic to be considered. Thus, costs are reduced even if the incumbent wins. During the 2000 A-76 DoD competitions between 1978 and 1994, the MEO reengineering process resulted in 30–35 percent reductions in government employees and 22–35 percent reductions in annual costs. Historically, private/public sector wins have been about even. In-house cost estimates are based upon: personnel; overhead/indirect; materials and supply; depreciation and cost of capital and rent; operation, maintenance and repair; utilities, travel, and insurance; MEO subcontracts; and other costs. Personnel costs include fringe benefits (leave, training, etc.) as well as salary. They are calculated in terms of full time equivalents, or FTEs, (normalizing efforts by a standard number of work hours per year per employee). However, the incumbent gets a 10 percent “discriminator” differential to cover learning curve losses from switching to someone else. A winning bid must thus reduce costs more than 10 percent of the incumbent's personnel-relate costs (or \$10 million over the period of performance). The incumbent also doesn't pay taxes or dividends (show a profit to stockholders). The private sector considers this unfair, but the courts have upheld it as a normal incumbent competitive advantage.

A “Freedom from Government Competition Act” bill failed to pass Congress in 1996 and 1997. In 1997 the FAA awarded a \$250 million contract to the Department of Agriculture for data processing services. Further bills were proposed in 1998

("Competition in Commercial Activities Act HR 716 and Federal Activities Inventory Reform Act S314) to promote outsourcing. The latter, FAIR, became law and gave requires all federal agencies to implement A-76. It supported the DRI and accentuated core government functions. DoD outsourcing goals for Fiscal Year 2000-2005 cover competition for 220,000 positions (IRMC New World of the CIO Course). See "The U.S. Navy Arrives at a 'Soft Landing' Solution for Environmental Detachments" (August 5, 1999) <http://govinfo.library.unt.edu/npr/library/announc/navsea.html> (IRMC Leadership for the 21st Century Course). Franchising occurs when a government activity markets its services to other government activities on a "fee-for-service" basis. A-76 policy is that "whenever commercial sector performance of a government-operated commercial activity is "permissible," a comparison of the costs of contracting versus in-house performance shall be conducted to determine who will do the work."

Past performance of A-76 indicates a 20-percent in-house average savings and 40-percent contractor average savings in 2,138 competitions for 81,990 FTEs from 1978 to 1994. These competitions were won 48 percent government and 52 percent contractor and yielded 31 percent savings (\$1.47 billion). Examples of commercial activities include: automated data processing services (programming, systems analysis, systems engineering/installation, equipment installation/operation/ maintenance) and office/administrative services (managing IT systems/products/ distribution, managing communications systems, and materials management) (IRMC Advanced Software Acquisition Management Course).

<http://govinfo.library.unt.edu/npr/library/gao/gg97048.pdf>.

It is a characteristic of primitive thinking to personalize social problems. (Hans J. Morgenthau and Kenneth W. Thompson, *Politics Among Nations—The Struggle for Power and Peace*, Alfred A. Knopf, New York, 1948, p. 8.)

A-130 (Management Of Federal Information Resources), 2/8/96—see Federal Managers Financial Integrity Act (FMFIA) <http://govinfo.library.unt.edu/npr/library/omb/247a.html>

Office of Management and Budget (OMB) Circular that vests accountability for IT outcomes in program management. It requires the Defense Information Systems Agency (DISA) to "prepare, and update as necessary throughout the information system life cycle, a benefit-cost analysis for each information system ... that relies on systematic measures of mission performance, including the: (a) effectiveness of program delivery; [and] (b) efficiency of program administration ..." (DISA *Performance Planning Guidance* for Fiscal Year 1998, p. G-3) (IRMC Measuring Results of Organizational Performance Course). It incorporates Computer Security Act requirements (IRMC Assuring the Information Infrastructure Course). A-130 requires that agencies consider risk when determining the need for and selecting computer-related control techniques. A-130 should cover each general support system and each major application. Topics required by A-130 include: rules of the system or application, training, personnel controls and security, incident response capability, continuity of support and contingency planning, technical security and controls, system interconnectivity and information sharing, and public access

controls. A-130 requires agencies to review information system security once every three years prior to system accreditation; FIPS Pub 102, *Guideline for Computer Security and Accreditation*, provides additional guidance (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

If a man take no thought about what is distant, he will find sorrow near at hand.
(George Steiner, *Top Management Planning*, MacMillan & Co., New York, 1969, p. 203.)

B

Balanced Scorecard <http://www.balancedscorecard.org/default.html> (Balanced Scorecard Institute)

A model for organizations to create a vision and strategy that balances the needs of various types of stakeholders and measures progress against objectives created to satisfy those needs. It was devised by Robert S. Kaplan and David P. Norton and promulgated in "Using the Balanced Scorecard as a Strategic Management System," *Harvard Business Review* (1996, January-February, pp. 75-85). The model includes financial, customer, internal business process, and learning and growth as dimensions of enterprise success. Questions asked include: "To succeed financially, how should we appear to our shareholders? To achieve our vision, how should we appear to our customers? To achieve our vision, how will we sustain our ability to change and improve? To satisfy our shareholders and customers, what business processes must we excel at?" The balanced scorecard presents a more complete picture of an enterprise and what makes it a success (IRMC Leadership for the 21st Century Course). See Procurement Executives' Association *Guide to a Balanced Scorecard Management Methodology*, (December 1998,) and Kaplan and Norton's *The Balanced Scorecard: Translating Strategy into Action* (Harvard Business School Press, Boston, 1996). Department of Commerce Guide: <http://oamweb.osc.doc.gov/bsc/>. The Naval Undersea Warfare Center, Newport, constructed their Balanced Scorecard with the following perspectives.

**Naval Undersea Warfare Center, Division Newport,
Balanced Performance Measures^a**

Financial	Customer	Employee	Internal Business	Learning and Growth
Meet (net operating result (NOR) target	Increase customer satisfaction	Recruit, develop, and retain world class workforce	Increase science and technology (S&T) funding	Improve teamwork
Sustain high efficiency	Increase customer base	Provide work environment that enhances job performance and product/service quality, and encourages innovation	Increase advanced development funding	Increase innovation-related initiatives for products and services
Sustain/increase employee work base	Ensure customer retention	Provide leadership, direction, and communication	Reduce cost of doing business	Increase capabilities and competencies of workforce
Manage leverage ration	Be provider of choice	Reward and recognize in consonance with division goals	Reduce latent fleet defects	Increase partnering with industry and academia
			Bring technical processes under process management	
			Achieve seamless information flow	

a. IRMC Measuring Results of Organizational Performance Course.

See *Executive Guide: Measuring Performance and Demonstrating Results of IT Investments* (GAO/AIMD-97-163, exposure draft September 1997) for suggested specific measures for IT projects' balanced scorecards. The General Service Administration's *Performance-Based Management: Eight Steps to Develop and Use IT Performance Measures Effectively* <http://www.itpolicy.gsa.gov/mkm/pathways/pathways.htm> states (p. 47) that the balanced scorecard has the following characteristics for IT projects: translates business objectives into performance measures, serves as a portfolio of measures that are interrelated, provides a comprehensive view of the entire IT function, allows a project more than one perspective, allows operational measures to be used, assesses multiple projects and modules, and facilitates integration and alignment of projects to common objectives. See also Kaplan and Norton's "The Balanced Scorecard—Measures that Drive Performance," *Harvard Business Review*, (1992, January-February) and "Putting the

Balanced Scorecard to Work" *Harvard Business Review*, (1993, September-October) (IRMC Measuring Results of Organizational Performance Course). Government balanced scorecard: mission (accomplishment, impact/results, sponsor satisfaction), users and direct customers (satisfaction, relationship, demand), Internal (quality, efficiency, innovation), enablers (competency, technology, climate), and financial (budget, spending, ROI) (IRMC Advanced Software Acquisition Management Course).

From Gary Hacker's *HR Metrics News* consolidated from Issues 1-5 (OPM):

FAA's Office of Human Resources Management: Using a Balanced Scorecard to Translate Human Resources Vision into Action: <http://unpan1.un.org/intradoc/groups/public/documents/aspa/unpan001865.pdf> May 2002. FAA presentation to the Balanced Scorecard Interest Group.

IRS Balanced Measures and Performance Measurement: <http://www.opm.gov/compconf/postconf01/balance/dcrane.htm> April 2002. IRS presentation at OPM's Strategic Compensation Conference 2001.

Naval Undersea Warfare Center Balanced Performance Measures: <http://www.nuwc.navy.mil/hq/strategy/strategicplan/page3.html> June 2002. "An important feature of our Strategic Plan is the establishment of a set of balanced performance measurements that allow us to assess our progress towards achieving our strategic goals."

U.S. Department of Commerce Acquisition Community – Balanced Scorecard: <http://oamweb.osc.doc.gov/bsc> April 2002. Contains information and links related to acquisition performance measures.

Veterans Benefits Administration Balanced Scorecard: <http://www.opm.gov/compconf/postconf01/balance/dbraley.htm> April 2002. VBA Balanced scorecard presentation at OPM's Strategic Compensation Conference 2001.

Our Balanced Scorecard (University of California—Berkeley; Business and Administrative Services): <http://bas.berkeley.edu/BalancedScorecard/Home.htm> December 2001. Overview of BSC used by USC-Berkeley's Business and Administrative Services.

Balanced Scorecard—Overall Priorities FY 2002 (Washington State, Department of Personnel) http://hr.dop.wa.gov/geninfo/dop_bsc.htm December 2001. Department of Personnel's overall balanced scorecard priorities for FY 2002.

U.S. Mint Balanced Scorecard: <http://apps.opm.gov/perform/clearing/clearing.cfm?id=24> March 2002. "By surveying its customers and using the data to set goals and improve its performance, the Mint dramatically improved its customer service."

Balanced Scorecard Interest Group: <http://www.aspanet.org/bscorecard> December 2001. This group of federal agency participants convenes monthly to learn from each other what is going on in the arena of managing agency operations through the use of a Balanced Scorecard approach. It creates an opportunity for those who have not made up their minds as to whether this is a useful approach to come and learn, and for those that have begun using a balanced scorecard approach to exchange experiences and lessons learned.

The Balanced Scorecard Institute: <http://www.balancedscorecard.org> December 2001. The Balanced Scorecard Institute is an independent, nonprofit source of information about applications of the balanced scorecard approach to management in government and other nonprofit organizations.

Balanced Scorecard in the Federal Government by James B. Whittaker: <http://www.mgmtconcepts.com/publications/management/fedscorecard.asp> June 2002. "One of the most successful of these approaches has been the "Balanced Scorecard"—a new corporate favorite—adapted specifically for implementation in the Federal Government." Describes how your Federal colleagues are achieving operational excellence and enhancing organizational performance using this successful approach.

Moderation in all things. (Publius Terentius Afer, c.190–159 B.C., *Andria* [The Lady of Andros] 1.61 from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 108.)

BandWidth (B/W)

The difference between the highest and lowest frequency (frequency range) for data transmission. The bandwidth provides an indication of the speed of transmission: that is, the larger the bandwidth, the more information can be sent in any given period of time. The bandwidth is inversely proportional to the wavelength. Their product equals the speed of light in vacuum.

Not by age but by capacity is wisdom acquired. (Titus Maccius Plautus, 254–184 B.C., *Trinummus*, act II, sc ii, 188, from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 105b.)

BaseLine (B/L)—see Benchmarking and Target/Threshold

A reference standard involving the identical measurements obtained on the same group of cases at some time earlier. Baseline studies attempt to show that an intervention produced a gain in organizational performance by comparing a measure of performance after some action is taken to a measure of performance before the action. The intervention is usually considered successful if the "after" metrics exceed the "before" or baseline metrics by a statistically significant amount (under the same conditions) (IRMC Measuring Results of Organizational Performance Course). In program management, projects have different baselines (e.g., allocated and product) at different phases of the project or program.

Getting out of the box and looking back. (Major General David Richwine, USMC, ASN[RDA], April 15, 1994.)

Base Realignment and Closure Act (BRAC) of 1993, 1995, ...

Laws that consolidated Department of Defense (DoD) bases/activities and relocated DoD personnel. Several rounds of BRAC were conducted in response to the fall of the Soviet Union in order to downsize DoD and reduce the budget. A number of bases were closed and others were relocated. The Space and Naval Warfare Systems Command (SPAWAR) was relocated from Crystal City (Arlington, VA) to San Diego, CA (new "old town" campus). Only 30 percent of its employees relocated with the Command. The other 70 percent retired, transferred to other government positions, or left the government. Many localities were financially and economically affected by BRAC but it did reduce infrastructure and funding for DoD. The Naval Air Systems Command (NAVAIR) was relocated to Patuxent River, MD; the Naval Sea Systems Command was relocated to the Washington Navy Yard; the Naval Supply Systems Command was relocated to Mechanicsburg, PA. Virtually the entire Navy program management complex in Crystal City was relocated elsewhere, though a few small offices and liaison personnel remain in the area. Nonetheless, due to budgetary pressure, aging platforms (especially expensive ships at sea), DoD has sought to continue BRAC rounds, but Congress (due to economic and political considerations) has declined. BRAC has sometimes been cited as an environmental condition conducive to or motivating organizations to implement KM due to the loss of knowledge-rich employees who do not relocate with their organizations.

Recently, economic realities have forced many organizations to reduce the number of employees ... Interestingly, streamlined units often become more responsive to the public they serve; and, frequently, a certain amount of decentralization of power occurs. (Murray Stein and John Hollwitz, *Psyche at Work, Workplace Applications of Jungian Analytical Psychology*, Chiron Publications, Wilmette, IL, 1992, p. 47.)

Basic Service Set (BSS)

Subsystems in a wireless local area network (LAN) architecture including an access point (connected to the LAN distribution system) and a set of workstations. An extended service set (ESS) can include several BSSs and or BSSs and individual workstations (with their own access points).

You never know till you try to reach them how accessible men are; but you must approach each man by the right door. (Henry Ward Beecher, *Proverbs from Plymouth Pulpit*, 1887, from *The International Thesaurus of Quotations*, Rhoda Thomas Tripp, Ed., Harper & Row, New York, 1970, p. 954, entry 955, No. 1.)

Behaviorally Anchored Rating (BAR) Scale

A scale used in rating forms in which alternatives are listed as sample behaviors that are developed systematically so that they form an ordered scale from low to high in usually seven steps (IRMC Measuring Results of Organizational Performance Course).

One day when Booker T. Washington, the famous Negro educator was in haste to catch a train, he hurried to a horse-stand and asked the driver of a cab to take him to the station. "No," replied the driver. "I've never driven a black man, and I never will." "All right,

friend," retorted Booker Washington cheerily. "Just hop into the back seat and I'll do the driving." The astonished cabby did as he was bidden, and Washington caught his train. (Quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Englewood Cliffs, NJ, Prentice Hall Inc., June 1961, p. 339.)

Benchmarking—see Baseline, Performance Measurement, and Target/Threshold

The process whereby an existing action, product, or service becomes the reference point (yardstick) against which similar actions, products, or services are measured; use of an industry or government standard. Benchmarks are one of several methods used to evaluate performance and to implement metrics. The DON CIO's *Metrics Guide* is included in both the KCO and COP CDs (Toolkits).

The continuous process of measuring products, services, and practices against the toughest competitors or those companies recognized as industry leaders. To be considered successful, current results must either exceed or attain a particular proportion of the benchmark for a comparable or exemplary organization using the same measurement. See Greg Hackett's "Benchmarking Your Planning and Reporting Function" (*Financial Executive* September-October 1998, pp. 45-46); Christopher Bogan and Michael English's *Benchmarking for Best Practices: Winning through Innovative Adaptation* (McGraw-Hill, New York, 1996, ISBN 0-07-006375-3); and Robert Camp's *Benchmarking: The Search for Industry Best Practices that Lead to Superior Performance* (Quality Resources, New York, 1989, ISBN 0-87389-058-2); and others (*Balancing Measures: Best Practices in Performance Management* (National Partnership for Reinventing Government, August 1999, <http://govinfo.library.unt.edu/npr/library/papers/bkgrd/balmeasure.html> pp. 61-62) (IRMC Measuring Results of Organizational Performance Course).

A man would do nothing, if he waited until he could do it so well that no one at all would find fault with what he has done. (Cardinal Newman, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Englewood Cliffs, NJ, Prentice Hall Inc., June 1961, p. 274.)

Benchmarking and Quality Publications in KM

Benchmarking Reports in KM: <http://www.benchmarkingreports.com/knowledgemanagement>

SECDEF Quality Management Office: <http://quality.disa.mil/>

U.S. State and Local Gateway: <http://www.statelocal.gov/bestprac.html>.

Beowolf

A Linux product enabling a person to create a virtual supercomputer from a large number of Personal Computers (PCs) (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

It is no harder to build something great than to build something good. (Jim Collins, *Good to Great*, Harper Business, New York, 2001, p. 205.)

Best Practices—see Benchmarking

Best practices are those generally considered to be superior in approach and results to other methods. Such practices can be in the form of processes, studies, surveys, or research. They may represent subject matter experts' (SME) experiences, research, and industry knowledge, and are often used as industry benchmarks. Best Practices often apply across many differing environments and organizations. They are, however, time sensitive. Also, an organization's internal practices may exceed generally accepted best practices.

Acquisition Best Practices: <http://www.arnet.gov/Library/>

Center for Army Lessons Learned: <http://call.army.mil>

DoD Installations Successful Practices Menu:

<http://www.acq.osd.mil/installation/inst/ideas.html>

Randolph Best Practices Clearinghouse:

<http://www.afmia.randolph.af.mil/afmia/mip/afbp/index.htm>

SPAWAR Knowledge Center: <http://skc.spawar.navy.mil/> SPAWAR Knowledge Center

DISA: <http://quality.disa.mil/bpd/index.cfm>.

People who "make the best of things" seldom try to make them any better. (Jacob Braude, *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 80.)

Beta Testing

Beta testing refers to the testing of a system or application by potential users. Alpha testing is done by the developer prior to beta testing. Beta testing (as an addendum to alpha testing) has the advantage of eliciting customer perspectives on the use of the item being tested. Developers' ideas of how users will actually employ an application may not be very accurate. To be successful, developers must obtain accurate feedback from beta testers (users). The Navy and Defense Department have employed operational testing for decades. After contractor testing (if the item is built under contract), government technical personnel perform a TECHEVAL or technical evaluation of the item. This is another phase of alpha testing. Following successful TECHEVAL, however, an independent agency (e.g., OPTEVFOR, the operational test and evaluation force) tests and evaluates the item (during OPEVAL or operational evaluation). This could be construed as a beta test since actual operators (users) are generally employed in this testing—independent of the developers. Official reports are then issued so developers and approval authorities can review the effectiveness of the item against its requirements. Production approval hinges upon a successful OPEVAL. Perhaps due to the diminished development and deployment times for IT applications and systems, developers have tended to reduce alpha testing and rely primarily upon beta testing to perform test, analyze, and fix procedures. This places a heavier burden upon beta testers. It also tends to reduce overall product quality after release. Thus, many minor upgrades, fixes, patches, and releases may be necessary to alleviate the many problems discovered in a major release. Purchasers may then be wary of major upgrades such as version 5.0 of something rather

than 5.3, which probably fixes some additional problems inherent in version or release 5.0.

Beware of cooks who never taste their own food. (Neal Pollock, 1989.)

Binary

A method of representing numbers using polarities only, that is, 1's and 0's or "on" and "off." In the familiar decimal system, each "column" represents a power of 10. The 1's column is actually 10^0 , or 1. The second column is $10^1 = 10$. The 3rd column is $10^2 = 100$, etc. Similarly, in the binary (system based on two versus the decimal system based on 10), the first (rightmost) column = $2^0 = 1$ (any number to the 0th power = 1), the next column is $2^1 = 2$; the next is $2^2 = 4$, the next is $2^3 = 8$, etc. Thus the comparison is as shown below.

Comparison of Binary, Octal, and Decimal Numbers

Binary	1	10	11	100	101	110	111	1000	1001	1010	1011	1100	1101	1110	1111
Octal	1	2	3	4	5	6	7	10	11	12	13	14	15	16	17
Decimal	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Binary numbers are used in computers, although they are not on/off, but are measured by voltage: either 5 volts (or more) = 1; less than 5 volts = 0. Some newer systems use 3 volts vice 5. Octal (based on eight) can easily be obtained from binary (since 8 is the 3rd power of 2; $8 = 2 \times 2 \times 2$) by taking each 3 binary columns (starting at the right) and converting the number. Thus, in binary the decimal 14 is represented as 1,110. Taking the last 3 digits (110) and converting them to octal/decimal = 6. The fourth digit is a 1. So the octal number is 16. See chart above. It has been said that "Black and white only works for zebras" (IRMC Advanced Information System Acquisition Course) but it also works for computers.

A young lad was sent to school. He began his lessons with the other children, and the first lesson the teacher set him was the straight line, the figure "one." But whereas the others went on progressing, this child continued writing the same figure. After two or three days the teacher came up to him and said, "Have you finished your lesson?" He said, "No, I'm still writing 'one'." He went on doing the same thing, and when at the end of the week the teacher asked him again, he said, "I not yet finished it." The teacher thought he was an idiot and should be sent away, as he could not or did not want to learn. At home the child continued with the same exercise and the parents also became tired and disgusted. He simply said, "I have not yet learned it." The parents said, "The other children are going on further, school has given you up and you do not show any progress; we are tired of you." And the lad thought with sad heart that as he had displeased his parents too he had better leave home. So he went into the wilderness and lived on fruits and nuts. After a long time he returned to his old school. And when he saw the teacher he said to him, "I think I have learned it. See if I have. Shall I write on this wall?" And when he made his sign the wall split in two. (Hazrat Inayat Khan, *The Sufi Message of Hazrat Inayat Kahn*, quoted by Ram Dass, *Journey of Awakening*, Bantam, New York, 1978, p. 197.)

Biometrics

Methods and devices that authenticate or identify an individual based upon that individual's unique characteristics, physical or behavioral. The most common biometric method is fingerprints. Formerly, such methods were too costly, but technology has

lowered the costs to the \$100 range per unit. Also, large purchases (e.g., the Navy/Marine Corps Intranet) provide an opportunity to drastically lower unit costs through quantity buying. Privacy issues of recording fingerprints have been defused because less than the entire print is needed for authentication purposes. These devices can include heat detectors to eliminate malicious attempts to circumvent the system (e.g., transferred prints). Biometric data can be embedded cryptographically onto a CAC (smart card). Other types of biometrics include iris or retina readers, palm readers, and algorithms that analyze the way an individual types. While there are error rates with these devices, their accuracy tends to be quite high. Furthermore, they can replace the use of passwords that are inherently limited. As passwords become more effective (more digits, more complex composition—special characters, case sensitive, numbers), people tend to write them down so as not to forget them—completely defeating their value. Biometrics can eliminate this difficulty.

Human after all? At Leeds University, England, problems in computer circuitry have been traced to the buildup of static electricity in nylon underwear worn by female operators in too close proximity to the excitable machine. (*Moneysworth*, 1971, Vol. 2, No. 5, December 13, New York.)

BlackBerry™

A handheld device made by RIM (Research In Motion) that competes with another popular handheld, the Palm, and is marketed primarily for its wireless e-mail handling capability. Through partners, BlackBerry also provides access to other Internet services. Like the Palm, BlackBerry is also a personal digital assistant (PDA) that can include software for maintaining a built-in address book and personal schedule. In addition, it can be configured for use as a pager (*Glossary of IM/IT & KM Terms*). BlackBerries can be configured for individual computers so that the computer user is logged on. This is a definite security risk to the network since users should be logged off when not on site. Rather, BlackBerries should be configured to connect to the network server through the firewall to protect the system (IRMC Managing Networked Security in a Networked Environment Course).

Everything that can be invented has been invented. (Charles H. Duell, Commissioner, U.S. Office of Patents, 1899. [received by author via Internet e-mail. This quotation is listed by Christopher Cerf and Victor Navasky in *The Experts Speak*, Villard, NY, 1984, p.225, but they state that The Institute of Expertology is investigating whether this is a true quote or not—see Urban Legends below].)

Blue Tooth

A method of short-range radio allowing communications among network devices. Its frequency range, however, overlaps with microwave ovens, so interference can occur (interference is much less if devices are kept a minimum of ten feet apart). They can also interfere with a network based upon its own radio-based network. Radio frequency (RF) use for network connections is also a distinct security risk. Hackers, for instance, practice "war driving" in which they drive around in cars with receivers in them attuned to blue tooth frequencies so they can discover where RF is being used. Then they can eavesdrop

on the network or otherwise affect its operations. With its added security functions, however, blue tooth is more resistant to tapping than is Home RF. RF network systems are susceptible to disruption and denial of service attacks from inside and outside. The blue-tooth standard is maintained by the blue-tooth special interest group (SIG) which is supported by 3Com, Ericsson, IBM, Intel, Lucent, Microsoft, Motorola, Nokia, Toshiba, and more than 2,000 adopter and associate companies. Some futurists have hypothesized that many household appliances (e.g., refrigerators) will someday be equipped with blue-tooth chips. Blue tooth is low power, low cost, short range, and low bandwidth. To increase security and resistance to interference, blue tooth uses frequency hopping, several different security modes, authentication via hardware addresses, and adaptive transmission power. It is optimized for short range and uses 128-bit encryption (IRMC Managing Networked Security in a Networked Environment Course).

The radio craze ... will die out in time. (Thomas Alva Edison, quoted by Christopher Cerf and Victor Navasky in *The Experts Speak*, Villard, NY, 1984, p.228.)

Boot

To start up a computer. The term comes from bootstrap (to pull yourself up by your bootstraps) which is the identifier of the small ROM program resident in computers that allows them to load their operating systems and begin operation. Cold boots (or cold starts, more generically) entail complete power up of the machine. Warm boots are resets or restarts of a computer that is already powered up. After hitting the Microsoft Windows "start" button and selecting "shut down," a window appears providing a selection of alternatives; one of those is "restart" which provides a shut down followed by a warm start or boot. If, however, the "shut down" option is chosen, then the computer will be powered down. The user must then cold start or cold boot the computer for it to operate.

Eat a live toad the first thing in the morning, and nothing worse will happen to you the rest of the day. (Poster)

Brain Drain

As predicted in the Hudson Commission's Report, *Workforce 2000*, the federal work force is losing its long-time employees and their inherent tacit knowledge. Little has been done so far to capture this knowledge. The Naval Facilities Engineering Command, for instance, estimates that 31 percent of its workforce will be eligible to retire in the next 5 years. Recent Base Realignment and Closure Act relocations have also resulted in a significant loss of corporate knowledge (for instance, when the Space and Naval Warfare Systems Command was moved from Arlington, VA, to San Diego, CA, only 30 percent of its workforce relocated with the Command). SPAWAR was able, however, to hire new workers—although it needed to train them. The Hudson Report, however, indicated that not enough appropriate workers would be available in the entire United States to address knowledgeable worker needs—even with a predicted increase in women in the workforce. Thus, Congress has expanded the visa program for certain foreign workers. Despite initial efforts to capture and transfer tacit knowledge, there is a continual brain drain in the government. It has been proposed that means be created to allow knowledge workers to tap the tacit knowledge of personnel retired from the federal government. The

story, for instance, is told of the government worker who retired to Florida. When a legacy system broke and the agency could not fix it, they contacted this worker and strongly urged him to return for a short visit and fix the critical system. He reluctantly did so, buying a \$1 part in a local store to do it. Then, he sent in a bill for \$50,000. The financial manager insisted that he itemize the bill, so he sent in an itemized bill: "part = \$1, knowing where to put it = \$49,999, total = \$50,000." They paid him.

The sage keeps his wisdom to himself while ordinary men flaunt their knowledge in loud discussion. So I say, "Those who dispute do not see." (Chuang Tsu, *Inner Chapters*, Gia-fu Feng and Jane English, trans., Vintage Books/Random House, New York, 1974, p. 37.)

Bricks and Mortar

Traditional business with a physical location and employees as distinct from dot-com, "click and order," Web-based businesses with few employees and a small physical location. Many brick and mortar businesses also have Web sites for customer purchasing as well, sometimes called "clicks and mortar" (or "brick and click"). Indeed, many Web sites merely feed into more traditional ordering and distribution systems invisible to customers. Brick and mortar sites require considerable investment in infrastructure, tend to be labor intensive, and have inventory and tax challenges. Nevertheless, they satisfy customer desires to experience products prior to purchase as well as browsing and impulse buying. It was once predicted, after typewriters were invented, that pencils would disappear. The same was predicted of brick and mortar businesses. KM, however, attempts to amalgamate social and psychological factors with technical ones to achieve more balanced (and more accurate) results. Such principles are applicable to electronic commerce.

It is generally better for people to arrive at truth through what they take to be their own volition. (Idries Shah, *Caravan of Dreams*, Octagon Press, London, 1968/1991, p. 127.)

Browser

Short for Web browser, a software application used to locate and display Web pages. The two most popular browsers are Netscape Navigator and Microsoft Internet Explorer (*Glossary of IM/IT & KM Terms*).

People who mind their own business die of boredom at 30. (Robertson Davies, *A Mixture of Frailties*, Everest House, New York, 1979, p. 22.)

Bug

A computer bug is an error or flaw in a software application. Bugs cause many types of errors including computer crashes. Bugs in browsers make computer networks vulnerable to hacking. For instance, early versions of JavaScript in Netscape Navigator 2.0 allowed a malicious applet to connect to any Internet host, potentially allowing attacks on computers behind firewalls. Another flaw allowed a hacker to have information automatically forwarded to him or her by e-mail from attacked sites.

As the ancient exorcists remind us, to know the name of a demon is to have power over it. (Robert Moore and Douglas Gillette, *The Warrior Within*, William Morris & Co., New York, 1992, p. 169.)

500 new bug fixes free each month: <http://www.bugnet.com/>.

Burn-In—see Learning Curve

A process for raising the reliability of a set of parts or other process input or product. Parts used in electronic equipment often have their lifetime specified with a mean time between failure (MTBF, reliability) or failure rate. However, these numbers are statistical averages and the standard deviation (or range of actual values) can be quite high. It was discovered that the actually observed MTBF for new parts was far lower than for older (already in use) parts. Thus, it is standard procedure to burn in new parts for some specified time (i.e., have them powered up and running) so that the worst parts would burn out during the burn-in period. Parts that survive burn-in have greatly increased reliability on average. The concept of burn-in can also be extended to software, since much shrink-wrapped software still contains many bugs. Contactor off-the-shelf software developers may rely upon beta testing to remove bugs, but this does not compensate sufficiently for designing in reliability and proper, formal alpha testing. Initial users find many errors that the developer supposedly fixes in later releases (versions). In addition, the concept can be extended to personnel—though it is usually referred to as the learning curve in this domain. Similarly, burnout is also applied to personnel (also known as liveware or wetware).

I look up high to see only the light, and never look down to see my shadow. This is wisdom which man must learn. (Kahlil Gibran, *Tears and Laughter*, Philosophical Library, New York, 1949, p. 52.)

Business Process Reengineering (BPR)—see Legacy and Reengineering

BPR constitutes the fundamental rethinking and redesign of business processes to bring about dramatic improvements in critical, contemporary measures of performance, such as cost, quality, service, and speed (*Glossary of IM/IT & KM Terms*). The BPR approach is diametrically opposed to total quality management or leadership. The latter seeks to gradually improve a process through continual, small changes. BPR seeks to entirely replace a process—virtually a paradigmatic change. The revolution in military affairs is essentially an implementation of BPR. Due to preexisting rules, regulations, procedures (and a huge multiplicity of stakeholders with different perspectives) it can be quite difficult to perform BPR. However, Office of Management and Budget Circular A-76, which orchestrates competition between government and industry for noncore government functions, allows a period of time for the government facility to improve its processes and procedures (setting aside many of the restrictions preventing such changes in the past). Government agencies have won about half of these competitions, sometimes due to successful introduction of BPR. BPR also has been cited as one method to drastically reduce military operating costs so as to use the saved funds to replace aging military equipment such as tanks, planes, and ships. BPR was made famous by Michael Hammer and James Champy in *Reengineering the Corporation*. As has been pointed out

many times, BPR must be properly coupled with IT for the predicted major gains to be realized. Naïve implementers sometimes implement total quality management and call it BPR or implement IT with little real BPR and then wonder why the gains were not achieved. Further, implementation of BPR (as explicated in KM) relies upon an amalgamation of social, psychological, and technical factors. All must be adequately addressed for successful implementation. Thus, proper introduction of BPR depends upon adequate use of the principles of change management.

See Reengineering Resource Center <http://www.reengineering.com> (IRMC Advanced Information System Acquisition Course). Turbo BPR: (Defense Information Systems Agency *Performance Planning Guidance for Fiscal Year 1998*, p. H-6); see Sharon Caudle's "Reengineering: Avoiding Becoming Lost in Space (Reengineering of Government Organizations)" (*The Public Manager: the New Bureaucrat*, 1998, Vol. 27, No. 1, Spring, pp. 27-30); *Balancing Measures: Best Practices in Performance Management* (National Partnership for Reinventing Government, 1999, August, <http://www.npr.gov/library/papers/bkgrd/balmeasure.html>) (IRMC Measuring Results of Organizational Performance Course). See William Ulrich's "Business Process Redesign and the Legacy Systems Challenge" (*Crosstalk*, 1995, Vol. 8, No. 1, January (IRMC Advanced Software Acquisition Management Course); *Information Technology: DLA Should Strengthen Business Systems Modernization Architecture and Investment Activities*. (GAO-01-631, <http://www.gao.gov/new.items/d01631.pdf> June 29, 2001, 64 pp.)

When Thomas Jefferson presented his credentials as U.S. minister to France, the French premier remarked, "I see that you have come to replace Benjamin Franklin." "I have come to succeed him," corrected Jefferson. "No one can replace him." (Quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 336.)

Business to Business (B2B)

B2B refers to the buying and selling of products and services between businesses rather than with the final customer (B2C). Manufacturers selling, for instance, to wholesalers would be an instance of B2B. Supply-side economics and supplier relationship management are aspects of B2B interchanges. The term is usually used for electronic business or electronic commerce.

The incentive of business is to make a profit. But the objective of business is not to make a profit but to serve a need. (James F. Lincoln quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 57.)

Business to Customer (or Consumer) (B2C)

B2C refers to the buying and selling of products and services between a business and a customer or consumer. It refers to retailers selling to end users or purchasers as opposed to B2B between businesses. Customer relationship management is an aspect of B2C. This term is usually used for electronic business or electronic commerce. Brick and mortar businesses also use B2C if they sell on the Web in addition to their traditional sales; however, the B2C aspect of their business would be considered click and order. Nevertheless, many B2C sales are not fully automated—only the front end (Web site) is.

Thus, B2C is sometimes more of a total quality management process improvement rather than a business process reengineering effort, which would imply more automation—replacing the entire process rather than one small part of it (the customer interface). Such an implementation could be considered “paving the cow paths.” The overall gains from such an approach are more virtual than actual. Thus, many dot-coms have failed since the gains from IT were far less than anticipated (since they did not employ BPR) and could not compensate for the limitations inherent in electronic sales (e.g., lack of psychological factors available to customers who can touch/feel the merchandise prior to sale).

Everything is worth what its purchaser will pay for it. (Publilius Syrus, first century B.C., Maxim 847, from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 127.)

Buzzword Compliant

Text that reflects the current politically correct (PC) terminology. Many terms used in DoD are replaced periodically with often minor or subtle changes in meaning or application. Examples include earned value management (EVM) replacing the cost/schedule control systems criteria (C/SCSC), approval for full production (AFP) replacing approval for service use (ASU), and innumerable others. Continuing personnel turnover (including changes in Administration) dictate that current terms be used since newer participants are usually unfamiliar with prior terminologies.

For the primitive mind the thing in itself is posited by the name. (C. G. Jung, *The Structure and Dynamics of the Psyche*, CW8, Pantheon Books, New York, 1960, p. 379.)

I find it most disadvantageous to let neologisms run riot in any science. The science then becomes too specialized in an unjustifiable way and loses contact with the world. I therefore prefer to use terms that are also current in other fields, at the risk of provoking occasional misunderstandings. (C. G. Jung, *Letters*, Vol. 1, Bollingen Series 95, 1906–50, Gerhard Adler and Aniela Jaffe, Eds., Princeton University Press, Princeton, NJ, 1953, p. 418.)

C

Cable Communications Policy Act (CCPA), 18 U.S.C. § 1030

Prohibits cable operators from using systems to gather personal information about subscribers without their consent; bars cable operators from disclosing data; requires annual notice to cable subscribers of personal data collected; has civil penalties (IRMC Assuring the Information Infrastructure Course).

He who spares the bad injures the good. (Publilius Syrus, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 129.)

Cache Memory

Very fast random access memory used to temporarily store items that are frequently reused so as to save time. Cache is especially useful for scientific research and technical programming versus standard word processing type use.

If you cannot say what you have to say in 20 minutes, you should go away and write a book about it. (Lord Brabazon, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion* Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 320.)

Cache Server

A server relatively close to Internet users and typically within a business enterprise that saves (caches) Web pages, and possibly, file transfer protocol (FTP) and other files that many users have requested so that successive requests for these pages or files can be satisfied by the cache server rather than requiring the use of the Internet. A cache server not only serves its users by getting information more quickly but also reduces Internet traffic (*Glossary of IM/IT & KM Terms*).

While we stop to think, we often miss our opportunity. (Publilius Syrus, Maxim 185, from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 125.)

Capability Maturity Model (CMM)—see Software (S/W)

A system for organizational evaluation that is based on the idea that an organization should improve its management processes and capabilities as it gains experience and matures. It is believed that organizations can progress through five levels of maturity—initial, repeatable, defined, managed, and optimizing—with prominent characteristics at each plateau (IRMC Measuring Results of Organizational Performance Course). The FFRDC Software Engineering Institute (SEI) of Carnegie-Mellon University (CMU) developed the CMM for software development companies and later added additional scales for software management etc.

Capability Maturity Model^a

Level	Focus	Key Process Areas (KPs)
5. Optimizing	Continuous process improvement	Defect prevention Technology change management Process change management
4. Quantitatively Managed	Product and process quality	Quantitative project management Organization process management Product line management Software quality management
3. Defined	Software acquisition processes and organizational support	Organization process focus Organization process definition Training program Integrated software management Software product engineering Inter-group coordination Peer reviews
2. Repeatable	Project management processes	Requirements management Software project planning Software project tracking and oversight Software supplier management Software quality assurance (QA) Software configuration management (CM)
1. Initial	Competent people and heroics	None

a. IRMC Advanced Software Acquisition Management Course.

See Tom Schorsch's "The Capability Im-Maturity Model (CIMM)" (*Crosstalk*, 1996, Vol. 9, No. 11, November, pp. 27-30); Saiedian and Kuzara's "SEI CMM's Impact on Contractors" (*IEEE Computer*, 1995, January, pp. 16-26, and reprinted in Don Reifer's *Software Management*, 1997, pp. 65-75); and Mark Paulk's "A Detailed Comparison of ISO 9001 and the CMM" (*Guidelines for Successful Acquisition and Management of Software Intensive Systems*, 1996, Vol. 2, June, Appendices, Department of the Air Force, STSC, pp. I-1 to I-15) (IRMC Advanced Software Acquisition Management Course).

Idiot-proofing is also genius-proofing. (Dave Marinaccio, *All I Really Need to Know I Learned from Watching Star Trek*, Crown Publishing, New York, 1994, p. 94.)

Capital Planning and Investment—see A-11 and Portfolio Management

A process for the effective selection, management, and evaluation of IT investments. The *DON IM/IT Capital Planning Guide* is a tool, developed by the Department of the Navy Chief Information Officer (DON CIO) that outlines DON capital planning policies and procedures, and provides a model to assist managers and decision makers with the capital planning process (*Glossary of IM/IT & KM Terms*). This discipline is one of the 10 federal CIO competencies, specified by the Federal CIO Council Executive Board, included in the IRMC's curriculum for its CIO certificate. The Information Technology Management Reform Act makes agency heads responsible for capital planning, monitoring, and evaluating for their agencies (IRMC New World of the CIO Course).

Capital planning is not unique to IT but is an important feature of financial management. It is included in many MBA programs. Financial management is also addressed in the Defense Acquisition Workforce Improvement Act (DAWIA) under its "FIN" (financial) competency area.

Proposed IT capital investments must compete with other capital projects for the same scarce funds. Projected financial returns must be adjusted to include risk. Despite the financial planning and evaluation of capital investments, survival of an organization in a competitive, dynamic environment can be the most telling reason for investing in IT. Such nonfinancial reasons can be described as quantitative (e.g., faster cycle time or service) or qualitative (increased customer satisfaction or employee commitment). It can be difficult to accurately assign dollar values to such criteria in the government. Following selection of IT investments, an organization must implement or control them and gather metrics data during operations so that they can later be evaluated. Thus metrics methods must be created and installed in parallel with the investment.

Finally, the evaluation of prior investments should become part of the process of selecting new investments. Each investment must be evaluated as to its contribution to the whole enterprise. The best individual investment may not be the optimal choice for a particular organization at a particular point in time. The best decisions create the best IT portfolio. Management should also be flexible enough to modify projects to correct or re-aim them over time.

Lessons learned (à la KM) should be collected and reflected upon including the efficacy of metrics methods and the capital planning and investment process itself. The CIO must be part of this process. Per decision theory, the three factors important in selecting and evaluating investments are value (projected/actual ramifications/benefit/ROI to the enterprise), risk (probabilities of success or failure), and costs (life cycle and cash flow, considering present value). Activities often have an executive management board or investment review board to decide on investments, tradeoffs, etc. They may only consider investments that exceed a designated cost threshold. The roles of CIO, CFO, CEO, etc., should be defined and understood amongst the players (IRMC New World of the CIO Course). See DoD's *Guide for Managing IT as an Investment and Measuring Performance* (version 1.0, 1997, February 10) and GSA's *Performance-Based Management: Eight Steps to Develop and Use IT Performance Measures Effectively* (<http://www.itpolicy.gsa.gov/mkm/pathways/pathways.htm>, p. 51) (IRMC Measuring Results of Organizational Performance Course). See the DON IT *Investment Evaluation Handbook* (DON CIO, version 1.0, July 2001), available at the DON CIO Web site: <http://www.don-imit.navy.mil>, and the *Executive Office of the President: Analysis of EOP's 1999 Information Technology Architecture Update and Capital Investment Plan Report* (AIMD-00-63R, February 4, 2000, 16 pp. <http://archive.gao.gov/f0302/163215.pdf>).

Whoever creates affirms that the creative act has meaning, a meaning which transcends the act itself. (Elie Wiesel, *Souls on Fire*, Summit Books, New York, 1972, p. 31.)

At 3M: We consider a coherent sentence to be an acceptable first draft for a new-product plan ... We don't constrain ourselves with plans at the beginning when ignorance is highest. Sure we plan. We put together meticulous sales implementation plans. But that's after we know something. At the very front end, why should we spend time writing a 250-

page plan that tries to drive out ignorance before having first done some simple tests on customer premises or in a pilot facility somewhere ... New Business Ventures Division: An NBVD product is *never* justified on the analytic case; it must be based on belief. (Thomas J. Peters and Robert H. Waterman, Jr., *In Search of Excellence*, Warner Books, New York, 1982, p. 232.)

Case-Based Reasoning (CBR)

CBR is an application of artificial intelligence that uses lessons learned from past cases to answer questions, design documents, create strategies, etc. A particular CBR tool is selected to match the user objectives, then tailored or tuned to the specific application. Cases are then selected for loading into the tool. Once operational, the algorithm asked the user questions concerning the specific job at hand then presents selected cases or parts thereof for the user's consideration. If the first does not complete the task at hand, the user then enters the results of the first trial to enable the CBR tool to select a better one.

Interestingly enough, the number of cases needed to be preloaded prior to effective use is relatively low—fewer than would be guessed. The success rate of CBR tends to be quite high; however, the complexity of the task may necessitate considerable work by implementers prior to fielding the system even when using an off-the-shelf tool.

The Naval Research Laboratory has done extensive work with CBR. David Aha, for instance, designed the CBR tool embedded into the Knowledge-Centric Organization Toolkit's version 2.0, adding a guided search capability. They have also assisted Port Hueneme in implementing a CBR tool for equipment diagnosis on ships at sea, lowering the need for additional personnel. They have also used the tool to support operational planning for the fleet. Furthermore, their CBR tool-set can also be used to create new documents based on a set of older ones of similar type. This is similar to the Navy International Programs Office's (IPO) international agreements generator (IAG) program, with which one can create a first draft of an international agreement in far less than a day. For instance, it was used to create the first draft of the acquisition category (ACAT) ID multifunctional information distribution system (MIDS) production phase supplement prior to negotiation with four other NATO nations.

See "Case Based Reasoning" in *Chips Magazine*, DON CIO and SPAWAR, Winter 2002, page 29, at http://www.chips.navy.mil/archives/02_winter/index2_files/case_based_reasoning.htm.

A technology that attempts to combine many of the positive features of the above technologies is case-based reasoning (CBR). CBR has become the most common technology for problem resolution in the customer support environment. CBR provides a method for representing past situations ("cases") and retrieving similar cases when a new problem is input. In the customer support environment, past problems and their solutions are stored as cases. Given a description of a current problem, the system searches for similar known cases ... The system then asks the user questions (proactively) about the problem to help narrow the search for the correct solution. Problems not in the case-base represent opportunities to improve the knowledge repository.

Technical experts solve these problems and input their resolutions into the case-base. While CBR has evolved from the research community, it has resulted in numerous business successes in customer support and won several innovative applications awards. In fact, CBR is probably the form of "artificial intelligence" software that is in broadest commercial

use today ... Like all technologies, however, CBR has its limitations. Chief among them is that knowledge must be "authored" in order to fit into the case structure. This typically means that analysts with expertise in case development must review and edit submissions to the knowledge base to ensure conformance and quality.

Increasingly, however, it is possible to create cases directly from documents that contain support knowledge by scanning the documents and running them through an automated case generator. As this emerging technology matures it will allow nonexperts in CBR to create new cases. However, ensuring the quality of the knowledge base is still likely to require some human intervention. (Thomas H. Davenport and Philip Klahr, "Managing Customer Support Knowledge," *California Management Review*, Berkeley, CA, Spring 1998, Vol. 40, No. 3, pp. 195-208.)

Central Design Activity (CDA)

CDAs develop and maintain application software and are responsible for making the application software work within a domain (*Glossary of IM/IT & KM Terms*). They are an IT adaptation of the design agent (DA) and technical development activity (TDA) defined in NAVSEAINST 5400.57B.

There is no I in "team." (Marion [LL Cool J] on "In the House," television show, September 2, 1997.)

Central Tendency

A type of error in which the rater does not tend to use the extreme ends of the scale and thereby fails to differentiate between strong and weak subjects (IRMC Measuring Results of Organizational Performance Course). The dynamic range of a set of scores is the difference between the lowest score and the highest score. When human raters are used, however, they tend to rate or score more heavily toward the middle of the scale independent of the actual value of the items being scored. Thus, there are more scores in the mid-range area so that the full dynamic range of the data is not achieved. This negatively affects the statistics involved. Central tendency needs to be compensated for in such areas as award fee evaluations, bid proposals, etc. For instance, if technical raters succumb to the central tendency, the various bidders will tend (especially if there are questions and best and final offers as part of the evaluation) to equalize towards the middle of the rating scale. Under such conditions, the cost will prevail over the technical proposals, defeating the government's desire for a "best value" award. It is incumbent upon the chairperson of the technical committee or panel (e.g., source selection evaluation board, SSEB) and the oversight board (source selection advisory council, SSAC) to take action to preclude such an effect.

Mediocrity succeeds wonderfully well nowadays—nobody hates it because every one feels how easily they themselves can attain it. Exceptional talent is aggressive—actual genius is offensive; people are insulted to have a thing held up for their admiration which is entirely out of their reach. They become like bears climbing a greased pole; they see a great name above them—a tempting sugary morsel which they would fain snatch and devour—and when their uncouth efforts fail, they huddle together on the ground beneath, look up with dull, peering eyes, and impotently snarl! (Marie Corelli, *Ardath*, R. F. Fenno & Co., New York, pp. 14-15.)

The princely man ... stands in the middle, and leans not to either side. The princely man enters into no situation where he cannot be himself. (Confucius, *Wisdom of Confucius*, Peter Pauper Press, Mt. Vernon, NY, 1963, p. 47.)

CERT—see Computer Emergency Response Team—shortened term for Digital Certificate

A professor gave a test for an ornithology class consisting only of bird's legs with the students directed to identify the species. A very upset student ripped up his copy of the test in front of the professor and stated, "This is ridiculous!" After a shouting match with the professor, the professor demanded the student's name so he could record a failing grade. The student pulled up a pant's leg and said, "You tell me, professor." (Jan Harold Brunvand, *Curses! Broiled Again! The Hottest Urban Legends Going*, W. W. Norton, NY, 1989). See Urban Legends below.

Certificate Revocation List (CRL)

A list of no longer valid certificates. It is issued or maintained by a certificate issuer, registration authority (RA), or certification authority (CA). It is analogous to credit card revocation lists. Employee churn, business life cycles, etc., dictate that digital certificates may become invalid over time. CRLs are a means of identifying invalid certificates. To be effective, CRLs must be frequently updated and properly distributed or accessible to users. Need should determine whether obtaining updates to CRLs are to be push or pull.

Never to grow old is a very, very evil fate, though the twaddle of our time says otherwise. (Robertson Davies, *What's Bred in the Bone*, Viking Press, New York, 1985, p. 401.)

Certification Authority (CA)

A human being or group of people that an organization authorizes to issue digital certificates to its computer users (similar to a passport office or officer). The CA signs the certs with his or her private key. CAs are, thus, central to key management infrastructure and public key infrastructure (PKI). Their public key is used by others to verify the authenticity of certs that they have signed. Examples of commercial CAs/service suppliers (supplied by Charles Breed) include: <http://www.baltimore.com>, <http://www.bceemergis.com>, <http://www.us.bull.com/us>, <http://www.certco.com>, <http://www.cybersafe.com>, <http://www.digsigtrust.com>, <http://www.diversinet.com>, <http://www.entrust.com>, <http://www.ibm.com>, <http://www.kyberpass.com>, and <http://www.verisign.com>. From *PKI: The Myth, the Magic and the Reality* by Charles Breed, http://networking.earthweb.com/netinfra/article/0,,12087_615851,00.html utilized in the IRLC Managing Networked Security in a Networked Environment Course). A major decision is whether to perform CA functions in-house or to out-source them. Major factors to consider are: economies of scale, privacy of information provided to the trusted third party (TTP), and interoperability with other types of certs. A bridge certification authority is a TTP of TTPs that facilitates transfer of certificates between CAs (IRMC Advanced Information System Acquisition Course). Weaknesses of hierarchical certification authorities and single TTPs can be assuaged via virtual verification (Petra van Krugten and Mark Hoogenboom, "B2C Security—Be Just Secure Enough," *Computers and Security*, Amsterdam, 2000 Vol. 19, No. 4, pp. 348–356) or mesh-network.¹ CAs that use distributed or peer-to-peer, multiple verification versus a single CA (IRMC Developing

Enterprise Security Strategies, Guidelines, and Policies Course author's final paper, *PKI Vulnerabilities*). (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

A man who has risked his life knows that careers are worthless, and a man who will not risk his career has a worthless life. (Orson Scott Card, *Children of the Mind*, Tom Doherty Books, New York, 1996, p. 248.)

Change Management <http://www-management.wharton.upenn.edu/leadership/>—see Leadership

The set of methods and techniques used to consciously manage the introduction and institutionalization of a change into an organization. According to the IRMC's New World of the CIO Course, history's lesson is "If you always do what you always did, you will always get what you always got." Similarly, insanity has been described as doing the same thing again and again and expecting to get a different result.

Change management is used in business, especially in marketing, to describe the product life cycle. This cycle (similar to virtually all human traits and processes) is normally distributed (i.e., fits the Gaussian distribution). Initially, the group of "early adopters" will accept the change that gradually (if change management is done correctly) permeates larger and deeper layers of the organization. But it is not expected that everyone will ever accept the change.

Price Pritchett's *High Velocity Culture Change* (and other works) describes ways to facilitate the process. Interestingly, Thomas Kuhn (in his classic *The Structure of Scientific Revolutions*) states that the scientific establishment of the day must die off before the new paradigm is established. Change can be evolutionary and gradual (e.g., total quality management [TQM]) or revolutionary and rapid (e.g., business process reengineering [BPR]), but major change (to be successful) must involve culture change in the organization. Interestingly, a university study (contrary to expectations) found that within one year of assuming their positions, many corporate chief executive officers were quite successful in changing corporate culture and turning around their enterprises. However, as asserted many times, half the solution is identifying the problem. All too often people try to correct a symptom or side effect rather than the cause or true "problem" or address the proper emerging opportunity. W. Edwards Deming's explanation of the central limit theory, with his control charts, upper control limits (UCLs), lower control limits (LCLs), common cause variation, and special cause variation² addresses this problem. Problems can be content problems or process problems.

Deming warned people about trying to fix a process that was in equilibrium (he called it "tampering") unless one is improving the process itself (e.g., to achieve a tighter statistical tolerance). Negative artifacts under such conditions are not justification for changing the process—only fixing the content (instance). If our security system detects and corrects for an attack, why modify the system? All too often that is exactly what is done. "If it ain't broke, don't fix it." Of course, proponents of reengineering and progress have also said, "if it ain't broke, break it." These two statements seem to be antithetical. They are not. The world is nonlinear, not linear. As pointed out by Frederick Hertzberg in his two factor theory, there is a fundamental, qualitative difference between moving from

a negative condition to a neutral condition on the one hand and moving from a neutral condition to a positive condition on the other. Some managers like to ignore problems by calling them opportunities. This is totally wrong. Challenges, yes, but not opportunities.

Various Schemas or Views of Polarity/Change

Views:	Hertzberg	Skinner	Jung	Change	Approach
Positive	Motivators	Positive reinforcement	Analysis: individuation	BPR	Break it
Negative	Hygiene factors	Negative reinforcement	Therapy: illness	TQM	Fix it

"There is nothing more difficult to carry out, nor more doubtful of success, nor more dangerous to manage, than to initiate a new order of things. For the initiator has the enmity of all who would profit by the preservation of the old system, and merely lukewarm defenders in those who would gain by the new one" (Machiavelli). The steps in change management have been variously described; one model has:

- 1) Establishing a sense of urgency
- 2) Creating and communicating the vision
- 3) Forming a coalition: marketing
- 4) Creating short term wins
- 5) Dealing with resistance
- 6) Institutionalizing new approaches
- 7) Awareness of introducing chaos into organizations.

"The paradox of success: If you keep on going in the same direction, you'll miss the road to the future" (IRMC Leadership for the 21st Century Course).

See <http://www.strategy-business.com/> for dealing with resistance to change; Bell Atlantic "success story:" <http://www.c3i.osd.mil/bpr/bprcd/3217s6.htm> (IRMC New World of the CIO Course).

Despite the difficulties of major organizational and perspective changes, as Jacquie "Moms" Mabley sang, "If you keep doing what you always did, you'll keep getting what you always got." Change is part of progress (IRMC Data Management Strategies and Technologies Course). On the other hand, "There is a fine line between vision and hallucination" (Ram Charan, "How Networks Reshape Organizations for Results" *Harvard Business Review*, 1991, September-October, 91503). Also, as Dutch Admiral Piet Hein stated, "Problems worthy of attack prove their worth by hitting back" (IRMC New World of the CIO Course).

Methods to Deal with Resistance to Change
(IRMC Leadership for the 21st Century Course)

<i>Approach</i>	<i>Used</i>	<i>Advantages</i>	<i>Drawbacks</i>
Education	Lack of Information	People may help	Time consuming
Communication	Lack of Information	People may help	Time consuming
Participation	Others are powerful	Commitment to change	Time consuming
Facilitation	Adjustment problems	Only way	Time consuming
Negotiation	Others are powerful	Avoids resistance	Can be expensive
Manipulation	Other tactics not applicable	Quick	Future problems
Coercion	Speed is essential	Overcomes resistance	Risky if folks are mad

From Gary Hacker's *HR Metrics News* consolidated from Issues 1-5 (OPM):

A Formula for Change (NASA): <http://science.ksc.nasa.gov/shuttle/nexgen/rlvhp6.htm> 5/02. $\text{Change} = P \times V \times C \times AS / R1 / R2$ where P = Pressure; V = Vision; C = Current State; AS = Achievable Steps; R1 & R2 = Resistance to change divided by the readiness for change.

Modified Tyson-Dannemiller Formula for Change: http://www.bradyinc.com/issue_8.html 5/02. $C = V \times D > R$ where C = Change; V = Vision for the Future; D = Dissatisfaction with the Status Quo; R = Resistance to Change.

The Change Formula: <http://www.leading-change.com/formula.html> 5/02. $CH = D \times M \times P > C$ where CH = Change; D = Dissatisfaction with the status quo; M = A new model for managing or organizing; P = A planned process for managing Change; C = Cost of change to individuals and groups.

As Sandra Smith (of DON CIO) says, " D^2G^2 = "If you always do what you always done, then you're gonna get what you always got."

For primitive egoism, however, the standing rule is that it is never "I" who must change, but always the other fellow. (C. G. Jung, *Civilization in Transition*, Princeton University Press, Princeton, NJ, 1964, p. 138.)

Everybody thinks of changing humanity and nobody thinks of changing himself. (Count Leo Tolstoy, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 353.)

If you don't know, don't "no!" (Neal Pollock, PMS-415, NAVSEASYS COM, March 23, 1987.)

Chief Financial Officers Act (CFOA), P. L. 101-576

Requires the systematic measurement of performance. It also requires agency financial statements, and the instructions for preparing these statements specifically require program performance measures (Defense Information Systems Agency, *Performance Planning Guidance for Fiscal Year 1998*, p. G-3) (IRMC Measuring Results of Organizational Performance Course). See chief financial officers home page: <http://cfoc.gov>.

The single biggest danger in business and life, other than outright failure, is to be successful without being resolutely clear about *why* you are successful in the first place. (Robert Burgelman, Stanford Business School, quoted by Jim Collins, *Good to Great*, Harper Business, New York, 2001, p. 213.)

Chief Information Officer (CIO)

The person responsible for information management, IT, and computer systems that support enterprise goals. As IT and systems have become more important, the CIO has come to be viewed in many organizations as a key contributor in formulating strategic goals. In the Department of Navy, the CIO reports directly to the Secretary of the Navy. The Clinger-Cohen Act (CCA) directed federal agencies to establish CIOs at the agency level. Since then numerous CIOs have been appointed at subsidiary organizational levels. Initially, CIOs tended to report to an organization's chief financial officer—reflecting the CIO's oversight of capital planning and investment efforts.

However, most organizations have moved to an independent CIO at a board level—reflecting the encompassing nature of this role and the importance of IT to organizational needs in changing environments. Educational organizations now have certificate programs for CIOs. The Information Resources Management College (IRMC), part of the National Defense University (NDU), created a “federal CIO competencies” wheel (<http://www.ndu.edu/irmc/> and <http://www.c3i.osd.mil/org/cio/ciolinks/cioedtrg.html>) that includes 10 competencies leading to the CIO Certificate (which were specified by the Federal CIO Council Executive Board—see <http://www.c3i.osd.mil/org/cio/execboard/>). These are: acquisition; architectures and infrastructures; capital planning and investment; leadership, performance- and results-based management; policy, process improvement; security and assurance; strategic planning; and technology assessment.

The Department of Defense (DoD) Authorization Act of 2000, Section 8121, directed that all IT programs be certified as CCA-compliant by the agency CIO. The same act of 2001, Section 8102, continued this requirement. The agency CIO in DoD is the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence, ASD (C³I). Normally, however, each Service CIO “certifies” program CCA compliance prior to DoD CIO review and final certification. See <http://cio.gov/clinger-cohen98sep.htm>. CCA requires CIOs to provide advice and assistance to agency heads; develop sound, integrated IT architecture; promote improvements in work processes; and monitor performance of IT programs; manage human assets (assess agency IT skills and the matching of incumbents versus requirements); develop strategies to address deficiencies; and report progress to head of agency.

The CIO has four roles/personalities that cut across all 10 competencies: visionary (document vision in plans and policies), integrator (identify and coordinate IT activities and processes within/without agency), facilitator (nurture partnerships, lead IPTs and teams), and operator (maintain IT systems as well as personnel) http://www.cio.com/archive/051599_kit.html (IRMC New World of the CIO Course).

The Federal CIO Council was established in 1997 as the principal DoD IT forum. Members include DoD CIO (i. e., ASD (C³I)); Army, Air Force, and Navy Department CIOs, USD (A&T), USD (P), USD (C), Director PA&E, USMC CIO, J-6, and DoD Deputy

CIO (The DoD Critical Infrastructure Protection [CIP] Plan [FOUO], of November 19, 1998, p. 17); Public Law 105-261, Additional Responsibilities of CIOs, part of the Defense Authorization Act of Fiscal Year 1999, Sec. 331 (sec. 2223 of Title 10 U.S.C. Chapter 131) which adds to the CCA's CIO responsibilities: Review and recommend to SECDEF IT/NSS budget requests, ensure IT/NSS interoperability, ensure that IT/NSS standards are prescribed, and eliminate duplicate IT/NSS of DoD components; also adds similar functions to the MILDEP CIOs (IRMC Assuring the Information Infrastructure Course).

Communications without intelligence is noise; intelligence without communications is irrelevant. (General Al Gray, former Commandant, USMC.)

Chief Knowledge Officer (CKO)

The CKO is the person who leads KM efforts within an organization and promotes systems thinking and enterprise perspectives. The CKO promotes all aspects of the knowledge life cycle including knowledge generation, sharing, storage, reuse, etc. As the champion of KM, the CKO communicates the vision and enables the organization to translate it into operational values. The greatest challenges include balancing technology with human factors and in organizational cultural change. Specific objectives may include: enabling accessibility of the best, relevant information for the area of practice to appropriate personnel; implementing cross-organizational communities of practice; establishing incentive programs for knowledge creation, sharing and re-use; defining roles, skill-sets, and opportunities for knowledge workers; and facilitating training and education of knowledge workers. Specific activities might include: knowledge fairs, toolkits, pilot projects, sub-organizational assists, publications, community of practice and interest participation and support, presentations to organization members through all hierarchical levels, specific knowledge tools (e.g., Web portal, knowledge network, knowledge base, videotapes), and social networking. While CKOs often report to CIOs, KM is not actually part of IT; thus, the CKO position may tend toward independence from IT. The CKO utilizes IT to perform KM, but not vice versa. It has been stated that human and social factors comprise more than two-thirds of KM, with IT comprising less than one-third. Some claim the difference is far greater than this.

From Gary Hacker's *HR Metrics News* consolidated from Issues 1-5 (OPM):

GovExec.Com's Calendar of Events in the Federal Arena: <http://www.govexec.com/calendar> 4/02. *Government Executive Magazine's* online calendar of events.

The highest reward for a man's toil is not what he gets for it, but rather what he becomes by it. (Jacob Braude, *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 344.)

Children's Online Privacy Protection Act (COPPA) of 1998

Requires Web sites to obtain verifiable parental consent before collecting personal information from a child under 13. Applies to commercial Web sites and online operators with actual knowledge that they are collecting kids' information (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

We know what can't be known and then spend our lives seeking to justify that knowledge. (Orson Scott Card, *Children of the Mind*, Tom Doherty Books, New York, 1996, p. 113.)

Chip Operating System (COS)

A sequence of instructions, or Mask, embedded in the read-only memory on a smart card, that performs its operations (similar to DOS or Windows in function but suited to the smart card's scope). A COS provides built-in error checking for the card per ISO 7816 (IRMC Managing Networked Security in a Networked Environment Course).

What the hell is it good for? (Robert Lloyd, Engineer at the Advanced Computing Systems Division of IBM, c.1968, reacting to colleagues who insisted that the microprocessor was the wave of the future. [received via Internet e-mail and verified in Christopher Cerf and Victor Navasky in *The Experts Speak*, Villard, NY, 1984, p. 230.)

Chi-Square

A statistical technique that can determine whether the groupings of cases on one variable are related to the groupings of cases on another variable (e.g., are high performers more likely to be experimental subjects than control subjects?) (IRMC Measuring Results of Organizational Performance Course). See ANOVA. The chi-square distribution is also used in determining the statistical significance of a statistical analysis.

Fair employment is a socio-economic condition in which all people who wish to work for a living shall have a reasonable opportunity to obtain employment in a position in which they can utilize their potential capability to the fullest and for which they shall receive equitable differential compensation related to differential in levels of work complexity. (Elliott Jaques and Stephen D. Clement, *Executive Leadership*, Cason Hall & Co., Arlington, VA, 1991, p. 126.)

Chunks or Chunking

Researchers have also found that people organize information into groups of relatedness, called "chunks," in order to retain the information in short-term memory. Chunks themselves are "familiar patterns" that come to be understood through experience as a unit, and as learning continues become increasingly larger and more interrelated. When new stimuli are related to this stored information and recognition of a pattern occurs, ideas and actions appropriate to the situation are elicited from memory (quoted by Rashi Glazer, "Measuring the Knower: Towards a Theory of Knowledge Equity," *California Management Review*, Berkeley, CA, Spring 1998, Vol. 40, Issue 3, pp. 175-194). A related theory suggests that cognitive elements in working memory, long-term memory, and short-term memory are represented as nodes in a network. As a person gains more knowledge in an area and begins to make connections between abstract principles and actual events, links between nodes are created and strengthened. Expert's networks may be more efficient as a result of increased speed through network links. See Debra C. Hampton, "Expertise: The True Essence of Nursing Art" (*Advances in Nursing Science*, 17/1, September 1994, pp. 15-24) and Dorothy Leonard and Sylvia Sensiper, "The Role of Tacit Knowledge in Group Innovation" (*California Management Review*, Berkeley, CA, 1998, Vol. 40, No. 3, pp. 112-132, Note 15).

Confidentiality, Integrity, Availability, Nonrepudiation, and Authentication (CIANA)

The information assurance acronym, CIANA itemizes the major factors in computer security: CIANA is studied at the IRMC's Managing Information Security in a Networked Environment Course, required to achieve NSTISSI 4011 certification.

Men and nations behave wisely once they have exhausted all the alternatives. (Abba Eban, quoted by Noah ben Shea in *Great Jewish Quotes*, Ballantine Books, New York, 1993.)

Ciphertext

Text that has been encrypted as opposed to cleartext or plaintext.

I really didn't say everything I said. (Yogi Berra, *The Yogi Book*, Workman Publications, New York, 1998, p. 9.)

Cleartext—see Encryption

Text that has not been encrypted or has already been decrypted so that anyone can read it—as opposed to ciphertext. Also known as plaintext.

I have never been hurt by anything I didn't say. (Calvin Coolidge, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 99.)

Clicks and Mortar

An intermediate category between traditional "bricks and mortar" businesses with physical locations only and dot-coms' "clicks and order" which do not have traditional locations. Businesses referred to as "clicks and mortar" have physical locations but sell through the Web as well. Thus, unlike Amazon, a clicks and order Web-based company, Barnes and Noble was a traditional bricks and mortar company but then added a Web site, becoming a clicks and mortar business.

Life is what happens when you've planned something else. (M. Scott Peck, *Further Along the Road Less Traveled*, Simon & Schuster, New York, 1993, p. 193.)

Client/Server

This is a type of computer network in which a network server services a number of client computers. Frequently, software applications reside on the server and are downloaded onto requesting clients as needed. This can reduce the number of overall licenses required. Laptop or notebook computers, however, generally have the applications resident on the computer since download time via 56 kbs modems would require inordinate latencies. Clients and servers are generally connected via local area networks in most organizations, but servers are usually accessible through firewalls from the Internet or dial-up connections. Computers today have great computing power and are considered "thick clients." However, dumb terminals (common in the past when attached to large mainframe computers) are making a come-back due to increased bandwidths and data rates provided by asynchronous transfer protocols or by improved Ethernet. Such computer terminals are called "thin clients."

For without the inner the outer loses its meaning; and without the outer, the inner loses its substance. (R. D. Laing, *Capital M*, Metropolitan Washington Mensa, 1994, Vol. 29, No. 5, May 1, p. 1.)

Client-Side Software

Client-side software resides on each client's computer. It is required for some applications (e.g., PKI). Such an implementation adds cost and complexity to a system, but may be required to attain the benefits of some applications. Where it resides can affect its ease of use. For example, it can be placed in the browser space.

Catch-UP is an application that analyzes programs on your hard drive and generates a customized list of updates available, including download sites:

<http://www.manageable.com>.

Every individual really does have his or her actual and measurable level of potential capability that demands an actual and measurable level of work to satisfy it, in just as real and substantial a sense as the fact that a hungry stomach requires food or the person will starve. (Elliott Jaques and Stephen D. Clement, *Executive Leadership*, Cason Hall & Co., Arlington, VA, 1991, p. 126.)

Clinger-Cohen Act (CCA) http://www.itpolicy.gsa.gov/mks/regs-leg/s1124_en.htm

The Information Technology Management Reform Act (ITMRA) of 1996, Division E of the National Defense Authorization Act for Fiscal Year 1996, P. L. 104-106, was signed into law on February 10, 1996, with an effective date of August 8, 1996. Section 808, Title VIII of the Omnibus Consolidated Appropriations Act of 1997, P. L. 104-208, renamed the Federal Acquisition Reform Act (FARA), Division D of the National Defense Authorization Act for Fiscal Year 1996, and the ITMRA as the Clinger-Cohen Act of 1996 (40 U.S.C.1401 et seq.). The purpose of Division E is to strengthen the federal government's management of IT to reduce costs, improve agency operations, and enhance services to the public.

A key goal of the Clinger-Cohen Act is for agencies to establish processes for selecting, managing, and evaluating IT investments to ensure that they:

- 1) provide a positive return on investment;
- 2) contribute to observable improvements in mission performance; and

3) are implemented at acceptable cost and risk within reasonable time frames. The Clinger-Cohen Act also established the position of chief information officer in federal agencies (*Glossary of IM/IT, KM Terms*). The Information Technology Management Reform Act redefined IT, identified new responsibilities for IT acquisition, gave new IT responsibilities to agency heads and the Office of Management and Budget, eliminated the Brooks Act (which greatly slowed IT acquisitions), emphasized new IT acquisition strategies; corrected Paperwork Reduction Act implementation by prohibiting chief information officers (CIOs) from performing collateral duty, being dual-hatted, or being placed too low in the agency pecking order to be effective; and added the objective to reduce costs by 5 percent while improving performance by 5 percent.

The CCA is essentially a compendium of IT best practices mostly developed in the private sector. Executive Order (EO 13011, *Federal IT*, 1996, July 26) is the CCA/PRA implementing directive (and Government Performance and Results Act mission-based

performance measures) (<http://www.itpolicy.gsa.gov/regs/exo13011/exo13011.htm> or <http://www.cio.hq.af.mil/private/gpra.shtml>) whose goal is improved IT systems management and a secure, interoperable federal government. It specifies a Federal CIO Council, IT requirements board (ITRB), and government IT services board (GITS) as expert resources across the government. For OSD implementation, see <http://www.c3i.osd.mil/doc/index.html>. DoD has been very proactive in implementing CCA including issuance of the *Guide for Managing IT as an Investment and Measuring Performance*, creating the DoD CIO Council, drafting a DoD IT strategic plan, issuing IT acquisition oversight policy, etc. While agencies have one CIO, EO 13011 provided a dispensation to DoD to have Service CIOs, which has been extended to other DoD components (IRMC New World of the CIO Course). See 8121 (IRMC Advanced Information System Acquisition Course). http://frwebgate.access.gpo.gov/cgi-bin/useftp.cgi?IPaddress=wais.access.gpo.gov&file=publ100.104&diectory=/diskc/wais/data/104_cong_public_laws (IRMC Assuring the Information Infrastructure Course).

<http://www.don-imit.navy.mil/cca/confirmation> provides the topics and guidance to prepare CCA compliance for acquisition category (ACAT) ID, IC, II, III, and IV programs; <http://www.don-imit.navy.mil/cca/certification> provides the information requirements to prepare CCA Compliance Certification Reports for acquisition category (ACAT) INFOSEC assessment methodology and ACAT IAC programs. ACAT I programs are generally the largest monetarily. IT (formerly AIS) programs have an "A" inserted after the Roman numeral; their dollar thresholds are smaller than for other (weapons) programs. "D" (weapons programs) or "M" (IT programs), following the Roman numeral, signifies review at the DoD level; "C" signifies review at the Component level (e. g. Service level).

See also, the Air Force legislative link page: http://www.cio.hq.af.mil/private/private_lawspage.shtml.

The value of portfolio optimization is summed up by the director of global IT at a pharmaceuticals company, who said, "If you allow people to optimize their functionality in a silo, it does not necessarily add up to a common corporate good." (MITRE paper submission on the "Value of Return-On-Investment (ROI) Analysis to the Government and Other Nonprofit Organizations," for the 2001 ISPA/SCEA Conference.)

Clumping

Organizing knowledge, information, or data around decision points to promote efficient and effective decision-making. This is a customer- or user-focused organizational approach (as opposed to clustering). Clumping is readily analogous to object-oriented databases. It is a more pragmatic or operational approach to organizing knowledge, information, and data.

Wisdom is so important that it might be said that mankind is composed solely of the Wise. (Ibn el-Murbarak, quoted by Idries Shah, *Thinkers of the East*, Arkana [Penguin], New York, 1971, p. 178.)

Clustering

Organizing knowledge, information, and data (KID) around similarities (e.g., by functional area). It can be done using a standard taxonomy. Examples include the phyla of biology, departments in colleges, books in libraries (e.g., the Dewey decimal system), etc. This approach is a worker- or specialist-focused organizational approach. It is very traditional and reflects human needs to categorize KID so as to mentally encompass it. Recently, however, scientific breakthroughs have been made in crossover areas and new cross-disciplines (e.g., biochemistry) have arisen that implicitly challenge older classification schema. Clustering (especially via an accepted taxonomy), however, has the advantages of standardization.

"The process of dividing a dataset into mutually exclusive groups such that the members of each group are as 'close' as possible to one another, and different groups are as 'far' as possible from one another, where distance is measured with respect to all available variables." See *An Introduction to Data Mining: Pilot Software Data Mining White Paper* (IRMC Data Management Strategies and Technologies Course).

Brilliance is the ability to look at old things in a new way. Our mindsets are clusters of interacting ideas, emotions, and attitudes that color our observations. These clusters—some people call them their philosophies of life—give rise to expectations that we tend to fulfill—meanwhile, however, our objectivity is diminished greatly by their emotional and subjective quality. Allowing unexamined mindsets to determine our attitudes and actions can result in mental stagnation, which is often manifested as arrogance and inflexibility or worse, as maladjustive or self-defeating behavior. (Christ Zois, *Think Like a Shrink*, Warner Books, New York, 1992, p. 2.)

Cluster Sampling

Members of the accessible population fall into convenient clusters of people so the sampling process randomly selects whole clusters from the full population, where everyone in the selected clusters is considered part of the sample (IRMC Measuring Results of Organizational Performance Course). In lieu of true random sampling, if the population consists of discrete subsets whose contents are homogeneous within the subset, the sampling can be randomized amongst the subsets, possibly requiring less samples, simplifying the process, and obtaining improved statistics.

There are more risk-averse people per square foot in the Pentagon than any other place in the world. (Joseph Cipriano, Program Executive for Information Technology, to the Industrial College of the Armed Forces [ICAF], March 28, 2002.)

Code-Division Multiple Access (CDMA)

CDMA is one of the several wireless transmission technologies/protocols (such as global system for mobile communication [GSM] and time division multiple access, or TDMA). After digitizing data, CDMA spreads it out over the entire bandwidth it has available. Multiple calls are overlaid over each other on the channel, with each assigned a unique sequence code. CDMA is less costly to implement, requiring fewer cell sites than the GSM and TDMA digital cell phone systems and provides three to five times the calling capacity. CDMA transmission has been used by the military for secure phone calls (from *Glossary of IM/IT & KM Terms*). CDMA was developed by: Qualcomm, AT&T, and

Motorola. It has seven to ten times the capacity of analog technology and six times the capacity of TDMA. It is dual band and operates at 800/1900 MHz. It uses a 14.4 kbps data rate (third generation, 3G), but the fourth generation is expected to have 144 kbps (ten times faster). Verizon Wireless offers CDMA cell phone encryption in the Washington, DC, area. Many U.S. cell phones use CDMA. Direct sequence spread spectrum (DSSS) is also known as direct sequence CDMA or DS-CDMA, (IRMC Managing Networked Security in a Networked Environment Course).

Nobody goes there anymore. It's too crowded. (Yogi Berra, *The Yogi Book*, Workman Publications, New York, 1998, p. 16.)

Collaboration—see Knowledge Hoarding

Two or more people working together in real-time, or in a “store-and-forward” mode. Collaborative tools or applications enable a group of people to collaborate in real-time over a network using shared screens, shared whiteboards, or video conferencing. Collaboration can range from two people reviewing a slide online to a conference of doctors at different locations sharing patient files and discussing treatment options (*Knowledge Management: The Catalyst for Electronic Government*, Raymond Barquin and Alex Bennet, Eds., Management Concepts, Vienna, VA, 2001 [USA]).

There's an element of truth in every idea that lasts long enough to be called corny. (Irving Berlin, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 241.)

The value of an idea has nothing to do with the sincerity of the man who expresses it. (Oscar Wilde, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 119.)

Collaborative Commerce (c-Commerce)

Gartner defines c-commerce as “collaborative, electronically enabled business interactions among an enterprise's internal personnel, business partners, and customers throughout a trading community. The trading community could be an industry, industry segment, supply chain, or supply-chain segment.” He calls c-commerce “the next era of e-business.” It includes both customer relations management and supplier relations management, allowing stakeholders to share business processes, information, etc. (*Enterprises Drive Competitive Advantage Through SRM* 4/16/01).

The only people who ever prize purity of ignorance are those who profit from a monopoly in knowledge. (Orson Scott Card, *Children of the Mind*, Tom Doherty Books, New York, 1996, pp. 81–82.)

Command and Control Research Program (CCRP)— formerly: Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C⁴ISR) Cooperative Research Project

CCRP is a Department of Defense project that does research in information security, information operations, and command and control, and publishes works (frequently via the National Defense University Press) in information warfare and related areas (e.g., *Network Centric Warfare* by Albers, Garstka, and Stein). <http://www.dodccrp.org>.

Does dissatisfaction not lead to a desire to change? ... Too little dissatisfaction means no desire to change. Too much means no ability to change. (Idries Shah, *Thinkers of the East*, Arkana [Penguin], New York, 1971, p. 159.)

Command and Control Warfare (C²W)

The military strategy implementing information warfare (IW). Integrated use of operational security (OPSEC), military deception, psychological operations, electronic warfare, and physical destruction, mutually supported by intelligence, to deny information to, influence, degrade or destroy adversary C² capabilities, while protecting friendly capabilities against such actions (Joint Pub 3-13.1 *Joint C²W Doctrine*); attack on and protection of the C² target set (IRMC Assuring the Information Infrastructure Course). C⁴I Pro is a listserve for those interested in C⁴I (command, control, communications, computers, and intelligence): CJCS MOP-30 3/8/93 *Command and Control Warfare* promulgates joint policy on C²W and seeks to maximize U.S./allied military effectiveness by integrating C²W into military strategy, plans, operations, etc. Includes counter-C² efforts such as those listed above) and C²-protection efforts by commanders-in-chief (IRMC Assuring the Information Infrastructure Course).

There is a monument in Gettysburg to honor the memory of a color-bearer who became isolated from his regiment after a charge. The regiment retired, but the color-bearer and several men held their ground. The Major sent a messenger through to the boy, "Bring the colors back to the regiment." The boy replied, "Bring the regiment back to the colors." (George W. Olinger, *Treasures* quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 84.)

Command, Control, Communications, and Intelligence (C³I)

Title of the Assistant Secretary of Defense (ASD) who also serves as the Department of Defense (DoD) chief information officer <http://www.c3i.osd.mil/>. *Compatibility, Interoperability, and Integration of C³I Systems* (DoDD 4630.5, November 12, 1992), and *Procedures for Compatibility, Interoperability, and Integration of C³I Systems* (DoDD 4630.8, November 18, 1992); DoDD 5137.1 of 2/12/92 charters the Assistant Secretary of Defense for C³I (ASD [C³I]) (IRMC Assuring the Information Infrastructure Course).

Technology is the very strategy of life: the essential form of action in the battle that is life itself. (Oswald Spengler, *Der Mensch und die Technik*, C. H. Bech'sche, Munich, 1932, p. 7, quoted by Joseph Campbell in *Historical Atlas of World Mythology Vol. I The Way of the Animal Powers Part I Mythologies of the Primitive Hunters and Gatherers*, Harper & Row, New York, 1988, p. 28.)

Command, Control, Communications, Computers, and Intelligence (C⁴I)

Title of applicable Service/Components (e.g., OPNAV N6 and Joint Staff J6). apboerla@nps.navy.mil; <http://www.stl.nps.navy.mil/c4i/>.

Good management consists of showing average people how to do the work of superior people. (John D. Rockefeller, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 57.)

Common

In military parlance, common refers to activities performed with U.S. allies, primarily but not exclusively NATO allies. For example, France, Germany, Italy, Spain, and the United States developed the Multifunctional Information Distribution System (MIDS) as a common (or multinational) system. Such international cooperative development programs are directed by an international steering committee under an international agreement negotiated among the member nations. The costs and results are shared among the members. Indubitably, rationalization, standardization, and interoperability (RSI) are primary considerations in such programs. See *International Cooperative Research And Development Programs* by Neal Pollock <http://www.dsmc.dsm.mil/pubs/arq/arq99.htm#Summer>. The Deputy Under Secretary of Defense for International Programs, DUSD (IP), also sponsors International Cooperative Opportunities Groups to encourage additional cooperative development programs in the future.

Discovereth the abilities of men, and employeth them according to their merits. (Sri Ramatherio, *Unto Thee I Grant*, Supreme Grand Lodge of Ancient Mystical Order Rosae Crucis, San Jose, CA, 1971, p. 31.)

Common Access Card (CAC)

A smart card intended to be used as the Department of Defense (DoD) standard identification card to replace existing military and civilian personnel identification cards and serve as the DoD's authentication token. The new CAC combines multiple technologies on a single plastic card, including: photograph, microprocessor/embedded integrated circuit computer chip, magnetic strip, and barcode. The CAC will be the principal card used to enable physical access to buildings and controlled spaces and electronic access to IT systems and applications that access the Department's computer networks. CACs will be issued to active duty and selected reserve personnel, DoD civilian employees, and eligible DoD contractor personnel. The data/information will be encrypted onto the CAC that can also hold digital keys and biometric information that can be loaded at a later date. CACs directly enhance security. Users, for instance, can remove their CAC from their computer, locking it from other personnel's use until they return. Upon reentering the CAC, the computer will return to the state it was in when the CAC was removed. See <http://www.govexec.com/features/1201/1201s7.htm>.

Various schemas have also been proposed to issue a national identity card (with CAC-like functionality) or to have each state issue its drivers licenses as CAC cards (they could include digital certificates, fingerprints, etc.), however, proponents of personal privacy oppose such efforts—they have yet to succeed. They, perhaps, feared they would have:

... no more privacy than a goldfish (Irvin S. Cobb, quoted by Frank J. Wilstack in *A Dictionary of Similes*, Bonanza Books, NY, MCMXXIV, p. 301.)

Common Object Request Broker Architecture (CORBA)—see glueware and middleware

An architecture and specification for creating, distributing, and managing distributed program objects in a network. It allows programs at different locations and developed by different vendors to communicate in a network through an "interface broker" (*Glossary of IM/IT & KM Terms*). Objects encapsulate specific functions that execute on remote servers

and return results to the client machine. Objects have language-neutral interfaces defined by CORBA interface definition language (IDL). Objects can be new or can be wrappers around existing code. The Object Management Group (OMG) is a nonprofit organization formed in 1989 to establish standards for distributed application development. It consists of over 500 companies. CORBA object communication is handled through object request brokers (ORBs). ORBs communicate with each other via Internet inter-ORB protocol (IIOP). "Stubs" and "skeletons" (created with IDL) are interfaces to remote objects. An object adaptor activates the remote object. IDL describes the remote objects' methods and data structures, allowing wrapping of legacy code. IDL mappings exist for virtually every language. Netscape, Oracle, and JavaSoft are employing CORBA in their products. CORBA enables communications between disparate objects residing on different platforms. See "CORBA Deals with Network Transparency," *BYTE Magazine*, October 1997 (IRMC Data Management Strategies and Technologies Course).

8. In nature, the optimum is almost always in the middle somewhere. Distrust assertions that the optimum is at an extreme point. (David Akin, professor, University of Maryland, "Akin's Laws of Spacecraft Design" [received via Internet e-mail] and confirmed by Dr. Akin dakin@umd.edu or DAKIN@SSI.UMD.EDU. See http://spacecraft.ssi.umd.edu/academics/akins_laws.html.)

Common Operating Environment (COE) also referred to as the DII COE—see DII

A set of software components intended to form the foundation for mission applications. It is analogous to a standard engine, transmission, and frame upon which an auto manufacturer can build different cars (e.g., Ford's Sable and Taurus). COE is expected to improve portability, interoperability, maintenance costs, and the software development process. It is sometimes referred to as DII COE since it is associated with the defense information infrastructure. The COE is envisioned as having several levels or layers: databases, operating system, infrastructure services, common support applications, standard application program interfaces, and (interfacing with) various domain mission applications (e.g., business, intelligence) across the three levels of combat (tactical, operational, and strategic). The global command and control system (GCCS) and global combat support system (GCSS) use the DII COE (IRMC New World of the CIO Course).

The DII COE establishes an integrated software infrastructure that facilitates the migration and implementation of functional mission applications and integrated databases across information systems in the DII. It provides architecture principles, guidelines, and methodologies that assist in the development of mission application software by capitalizing on a cohesive set of infrastructure support services. Its specification is derived from the complete TAFIM (*Information Management [IM] Strategic Plan: Information Superiority* version 2.0, DoD CIO, OCT 1999, p. 35) (IRMC Measuring Results of Organizational Performance Course). COE goals include: reducing the number of systems management personnel through centralized systems management, improved software, and automated procedures; simplifying the software development process and making it less expensive (IRMC Advanced Software Acquisition Management Course).

They told me that the fish ... were cold-blooded and felt no pain. But they were not fish who told me. (Heywood Broun, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 505.)

Communication Channels

Pathways used to send and receive communications (knowledge, information, data). They can be formal, informal, technological, human, individual, or organizational. Frequently, they are connected together in networks. Such networks are comprised of the channel (usually drawn as straight lines) and nodes (the points connected by the channels). The latter are represented as points or circles or other geometrical figures. Communications or "comms" channels are characterized by bandwidth (capacity). Nodes are evaluated in terms of numbers of channels and specifically, connections (channels) to other nodes or groups of nodes. Not all nodes are created equal. For instance, in social network analysis (SNA) nodes usually represent specific individuals (people). Suborganizations generally form distinct groups of nodes. The number of channels within these groups tends to be high. The number of channels between groups tends to be lower. Specific nodes connecting different groups may have a very high (but often unrecognized) value to the organization as a whole.

Communication plus agreement do not equal comprehension. (Idries Shah, *Thinkers of the East*, Arkana [Penguin], New York, 1971, p. 161.)

Communications Assistance to Law Enforcement Act (CALEA)

To restore lost electronic surveillance capabilities and prevent new ones from occurring; government is responsible for pre-1995 modifications (up to \$500 million); original implementation target was October 1998; extended to June 2000 (IRMC Assuring the Information Infrastructure Course).

If you tell the truth you don't have to remember anything. (Mark Twain, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 151.)

Communications Decency Act (CDA) of 1996—see Telecommunications Act of 1996

In Maine we have a saying that there's no point in speaking unless you can improve on silence. (Edmund Muskie, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 38.)

Community of Interest (CoI)

A group of individuals with a common interest. This interest does not necessarily relate to their day-to-day work or current tasking. Communities of interest may share ideas and communicate or collaborate. Members of a CoI sometimes migrate into a community of practice (CoP) in the same domain. Sometimes, CoI members can greatly benefit from related CoPs—their interest may even be practical, but temporary. Organizational upper management members may very well be participants in a CoI that is supported by (informally or formally) a CoP. The Naval Facilities Engineering Command's eNet, for instance, includes both types of communities such that they can interact with each other on a domain basis.

When a hundred intelligent heads are united in a group, the result is one big fathead. (C. G. Jung, *Letters*, Vol. 2, Bollingen Series 95, 1951–1961, Gerhard Adler and Aniela Jaffe, Eds., Princeton University Press, Princeton, NJ, 1953–1975, p. 220.)

The key to community is the acceptance—in fact, the celebration—of our individual and cultural differences ... can only occur after we learn to become empty—is also the key to world peace. (M. Scott Peck, *The Different Drum*, Simon & Schuster, New York, 1987, p. 186.)

Community of Practice (CoP)

A group of individuals with a common working practice who do not, however, constitute a formal work team. Communities of practice generally cut across traditional organizational boundaries and enable individuals to acquire new knowledge otherwise unavailable or at a faster rate. Qualified personnel may register to join the Knowledge Management Community of Practice (KMCP) at: <http://www.don-imit.navy.mil/quickplace/>. The DON CIO distributes the C-Port CD toolkit that has a wealth of knowledge and information concerning communities of practice. Its editor, orchestrator, and primary author can be reached at: bob.turner@faa.gov. Also, see Government Performance and Results Act CoPs in *Balancing Measures: Best Practices in Performance Management*, August 1999, National Partnership for Reinventing Government, p. 43, that can be found at: <http://govinfo.library.unt.edu/npr/library/papers/bkgrd/balmeasure.html> (IRMC Measuring Results of Organizational Performance Course). The DoD KM CoP is now located at <http://dodkm.communispace.com> and is administered by karen.gilmore@dau.mil.

Every man is like the company he is wont to keep. (Euripides, *Phoenix*, fragment 809, from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 86a.)

If one is not bound by a common goal, one just cannot stand other people, for they get on one's nerves too much. (Mary-Louise von Franz, *Individuation in Fairytales*, Spring Publications, Dallas, TX, 1982, p. 38.)

Community is a true alchemical process that transforms the dross of our differences into golden harmony. (M. Scott Peck, *The Different Drum, Community Making and Peace*, Simon & Schuster, New York, 1987, p. 171.)

Although communities of practice are fundamentally informal and self-organizing, they benefit from cultivation. Like gardens, they respond to attention that respects their nature. You can't tug on a cornstalk to make it grow faster or taller, and you shouldn't yank a marigold out of the ground to see if it has roots. (Etienne Wenger and William Snyder, "Communities of Practice: The Organizational Frontier," *Harvard Business Review*, January-February 2000, p. 143 [Reprint R00110].)

Some degree of natural convergence occurs in so-called "communities of practice," in which unconscious work norms guide much of the interactions among members. Managers interrupt these tacit work practices at their peril, and savvy managers may make good use of them in the service of innovation. Many of the barriers to the sharing of tacit knowledge are the same ones that inhibit innovation in general: hierarchies that implicitly assume wisdom accrues to those with the most impressive organizational titles; such strong preferences for analysis over intuition that no one dares offer an idea without "hard facts"

to back it up; and penalties for failure that discourage experimentation. (Dorothy Leonard and Sylvia Sensiper, "The Role of Tacit Knowledge in Group Innovation," *California Management Review*, Berkeley, CA, Spring 1998, Vol. 40, Issue 3, pp. 112-132.)

Community of Practice Compact Disk (CoP CD or CoP Toolkit)

Community of Practice Compact Disk devised and distributed by the Department of the Navy Chief Information Office. This toolkit is the groundbreaking tool in assisting organizations in establishing CoPs in order to improve their operations and institutionalize KM. Version 1.0 was issued at the electronic Business/Knowledge Fair, August 30, 2001, in Washington, DC.

Employees want most to feel good about themselves and what they do. An effective manager enhances both. (Thomas L. Quick, *Quick Solutions*, John Wiley & Sons, New York, 1987, p. 251.)

Compact Disks (CD)—see Optical Storage Devices

WOM: write only memory (Neal Pollock). You read data in, but never read it out again—totally secure and trustworthy and unrepeatable—e.g., CD-R.

Comparative Rating Scale—see Likert and Ordinal Rating Scales and Questionnaire

A scale used in questionnaires and rating forms in which the respondent rates the factor being judged against a qualitative statement or against some other factor. A rating scale comparing items or measuring changes or improvements (e.g., 5 = significantly better, 4 = better, 3 = about the same, 2 = worse, and 1 = significantly worse) (IRMC Measuring Results of Organizational Performance Course).

Everything objective is the outcome of that which is subjective. To change the visible you must change the invisible; and this can be done only through mind and heart. (Will L. Garver, *Brother of the Third Degree*, Purdy Publishing, Chicago, 1932, p. 255.)

Components—see Departments and Services

Divisions of the Department of Defense (DoD) including: the four Services (USA, USAF, USMC, and USN) and the nonService entities within DoD (e.g., Defense Contract Management Command, Defense Information Systems Agency, and Defense Logistics Agency).

A foolish consistency is the hobgoblin of little minds. (Ralph Waldo Emerson, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 125.)

Computer Emergency Response Team (CERT)

An organization chartered or empowered by an information system owner to coordinate or act in response to computer emergency incidents that threaten the availability or integrity of its information systems. Services have their own CERT systems. Activities usually use a limited number of extant CERTs. CERTs may also provide information on current threats. <http://www.cert.org/security-improvement>. Carnegie-Mellon University is known for its CERT capability. According to the General Accounting Office, knowing that an organization has a formidable response capability has proven to

be a deterrent to hackers and other unauthorized users (IRMC Managing Networked Security in a Networked Environment Course). cert@cert.mil 800-357-4231; DSN 327-4700, <http://www.cert.mil> (IRMC Assuring the Information Infrastructure Course).

Mistakes are their own instructors. (Horace, *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 130.)

Computer Fraud And Abuse Act (CFAA), 18 U.S.C. § 2707

Prohibits intentional access or attempted access to federal interest computers to obtain national security information with intent to injure the United States or to the advantage of any foreign nation; affect the government's operation of computers; alter, damage, or destroy information; or traffic in passwords (IRMC Assuring the Information Infrastructure Course). It establishes two felony offenses: first, crimes involving national defense, foreign relations, and computers used for governmental purposes, and second, trafficking in passwords with intent to commit fraud (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

If you believe a lie, somebody will make that lie come true. (Phil Silvers, in *The New Love Boat* [3] TV movie.)

Computer Fraud And Hacking Act (CFHA), 18 U.S.C. § 1030

Prohibits knowing, unauthorized access of a computer to obtain protected defense or foreign relations information with reason to believe it could be used to injure the United States or give advantage to any foreign nation and willfully deliver information to any unauthorized person; intentionally accessing computers without authorization and obtaining banking, credit card or consumer credit information or information from any U.S. department or agency or affecting use by the U.S. government and trafficking in passwords or similar information; knowing access to commit a fraud (if greater than \$5,000), knowingly cause transmission of malicious code, intentionally causing damage or transmission with the intent to exhort via threats to cause computer damage. Depending upon which clause (some have lesser penalties): first offense penalty: maximum of 10 years/maximum of \$250,000. Additional offense: maximum of 20 years (IRMC Assuring the Information Infrastructure Course).

The only teacher who's worth anything to you is your enemy. (Orson Scott Card, *Xenocide*, Tom Doherty Books, New York, 1991, pp. 124-125.)

Computer Incident Response Team (CIRT)

A team that provides direct response to computer incidents, including attacks on the system. They verify incidents, provide technical analyses to understand the nature of the system compromise, notify other involved parties, eradicate the effects of the attack, perform system recovery, archive vulnerabilities, provide patches and resolutions, and provide tools, education, auditing, and consulting and product evaluation. <http://www.nipc.gov/incident/cirr.htm> or nipc.watch@fbi.gov The February 1996 revision to *Office of Management and Budget Circular A-130, Appendix III, Security of Federal Automated Information Systems*, requires agencies to establish formal incident response

mechanisms and awareness training of these mechanisms for employees. The federal computer incident response capability is a collaborative effort among the National Institute of Standards and Technology (NIST), the Defense Advanced Research Project Agency's (DARPA's) CERT coordination center, and the Department of Energy's (DoE's) computer incident advisory capability. This service has been designed to provide federal civilian agencies with cost-reimbursable, direct technical assistance and incident handling support (IRMC Managing Networked Security in a Networked Environment Course). Other NIST publications include: Special Publication 800-12 *An Introduction to Computer Security: the NIST Handbook* of 10/95; Special Publication 800-13, *Telecommunications Security Guidelines for Telecommunications Management Network*, 10/95; and *Generally Accepted Principles and Practices for Security Information Technology Systems* of 12/95 (IRMC Assuring the Information Infrastructure Course). *Information Security: Challenges to Improving DoD's Incident Response Capabilities* (March 2001, GAO-01-341). CIRTs provide verification of incidents, technical assistance analysis to understand the compromise, notification of other involved parties, eradication, recovery, vulnerability archive, patches and resolutions, tools education, audit and consulting, product evaluation (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

You should hammer your iron when it is glowing hot. (Publilius Syrus, Maxim 262, from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 125.)

Computer Network Defense (CND)

A defensive aspect of information warfare and information assurance. In the United States, it includes the "defense in depth" concept, whereby there are defensive layers so that if an attack succeeds against the initial layer, it still must penetrate additional layers to have a (major) negative effect upon the system (network in this instance). This is an extension or application of the same principles as the fleet's missile defenses, which include distance defense (anti-missile missiles) and close-in defense layers (CIWS or Phalanx), for example. However, unlike most military weapons systems, computer networks face insider as well as outside attacks, so that CND must also address the insider threat. CND also lends itself to threat and risk analysis and the use of decision theory methods. CND activities are, however, restricted by legal restrictions, limited by cultural blinders and psychological perceptions, and subject to cost restrictions.

Dr. Robert Oppenheimer, who supervised the creation of the first atomic bomb, appeared before a Congressional Committee. They inquired of him if there was any defense against the weapon. "Certainly," the great physicist replied. "and that is—" Dr. Oppenheimer looked over the hushed, expectant audience and softly said: "Peace." (Quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion* Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 272.)

Computer Security Act of 1987 (CSA) 40 U.S.C. 759, P. L. 100-235 of 1/8/88

Assigns the National Institute of Science and Technology (NIST) to devise cost-effective security and privacy standards and guidelines as assisted by the National Security Agency (NSA) (an MOU signed in 1989 clarifies roles and responsibilities). Classified/Warner exempt systems are excepted. Established the National Computer

System Security and Privacy Advisory Board (CSSPAB) to advise SECCOM and NIST. Agency security policies must reflect the magnitude of potential harm from compromise. Summaries of agency security plans shall be included in the information resources management plan required by the Paperwork Reduction Act. National Security Directive NSD-42 (July 5, 1990) was issued to bring executive policy in line with the CSA and established the NSC Policy Coordinating Committee for National Security Telecommunications and Information Systems (NSTISSC). See NCSC-1, *National Policy for Safeguarding and Control of Communications Security Material* (January 16, 1981) and others (IRMC Assuring the Information Infrastructure Course). Reaffirms NIST responsibility for security of unclassified, nonmilitary government computer systems; NSA provides limited technical assistance and controls sensitive but unclassified (SBU) computers (under an Executive Order) (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

24. It's called a "Work Breakdown Structure" because the Work remaining will grow until you have a Breakdown, unless you enforce some Structure on it. (David Akin, professor, University of Maryland, "Akin's Laws of Spacecraft Design" [received via Internet e-mail] and confirmed by Dr. Akin dakin@umd.edu or DAKIN@SSL.UMD.EDU. See http://spacecraft.ssl.umd.edu/academics/akins_laws.html.)

Concurrent Validity

A form of criterion-referenced validity in which already validated measures are obtained from the same group of cases at roughly the same time that the measures are obtained using the instrument, and then the two sets of measures are correlated to assure they are related; a type of criterion-referenced validity (IRMC Measuring Results of Organizational Performance Course). If one measure is validated, another measure can be validated (under certain conditions) by strongly correlating it with the already validated measure.

If 50 million people say a foolish thing it is still a foolish thing. (Anatole France, *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 144.)

Confidence Level

The threshold of acceptability for the probability that a particular statistic would occur for some reason other than chance – usually 95 percent in business research (IRMC Measuring Results of Organizational Performance Course). The probability that a particular statistical conclusion is correct. The confidence level takes into account the ever-present error factor.

One is most ignorant of what he's most assured. (Edward F. Edinger, *Ego & Archetype*, Putnam, New York, 1972, p. 197.)

Confidentiality

This is the assurance that information is not disclosed to unauthorized persons, processes, or devices. It is the initial letter in the information assurance acronym, CIANA (confidentiality, integrity, availability, nonrepudiation, and authentication), which

itemizes the major factors in computer security. Presently, secure socket layer (SSL) encryption protects the buyer's transmission from being understood by the unauthorized. In future, it is anticipated that public key infrastructure will provide additional assurance for both buyer and seller.

The Moving Finger writes; and, having writ Moves On: nor all thy Piety nor Wit Shall lure it back to cancel half a line, Nor all thy Tears wash out a Word of it. (Omar Khayyam, *The Rubaiyat*.)

Connector

Connectors are people who connect other individuals or groups to others, facilitating and orchestrating knowledge, information, and data transfers. Malcolm Gladwell's term, in his work *The Tipping Point*, to designate certain individuals who excel in such connectivity or are important or rare links within a network, thus they may be major or exclusive nodes in a social network. Frequently, a connector may be the only person connecting a segment of an organization to the rest of the organization so that the true worth of the individual's efforts are distinctly underrated. Eliminating such a node would effectively separate the segment from the organization—decreasing the effectiveness and efficiency of the whole. Connectors tend to be major players in implementing cultural changes.

People exist by virtue of the help they give to one another ... Helping people improves the helped person's life and keeps the helping person human. (Chaim Potok, *In the Beginning*, Fawcett Crest, New York, 1975, p. 269.)

Content—see Content Management

Data, information, and knowledge contained in files or records (e.g., Microsoft Word or in a book), enabling it to be processed (modified, shared, stored, or used) by an individual or IT system. Content is the opposite polarity of process—activity that acts upon content. Total quality management and reengineering are different approaches to improve processes. They do not directly address content that is treated as a raw material by the processes employed. Content is the noun to the process' verb. Content can be stored in databases flat files, electronically, or in treeware.

A musical composition by a master does not have its perfect technical nature altered when played either by a beginner or a virtuoso. One has the ability more than the other to express the greatness of the composition; the composition, however, is the same for both. So, universal consciousness is the same in all living organisms from the point of view of mystical pantheism. The personal evolution, both of the physical organism and the consciousness of the individual, is what makes the difference in the display of the universal consciousness in the soul. (Samuel Rittenhouse, "Souls on the Planets," *Rosicrucian Digest*, 1975, Vol. LIII, No. 2, p. 24.)

Content Management—see Content and Infoglut

The management of content. "A means to provide meaningful and timely information to end users by creating processes that identify, collect, categorize, and refresh content using a common taxonomy across the organization" ("Is Your Content Under Control?" The American Productivity and Quality Center, <http://www.apqc.org/free/articles>).

Such management can be individual, organizational, or enterprise-wide. Gartner Group subdivides it into four segments: enterprise internal content, Web site content, e-business transactional content, and shared content ("The Gartner Group Commentary—Framework For Content Management" Research Note COM-10-1618, p. 1). Enterprise content management has been defined as: the creation, delivery, customization, and management of content across the enterprise ("The Content Management Market: What You Really Need to Know," by Priscilla Emery, *Bulletin of the American Society for Information Science*, ASIS, Washington; October/November, 2001, p. 1). More specifically, however, content management is often used to categorize, index, store, search for, and retrieve specific, relevant data, information, or knowledge. Many tools exist to accomplish such ends, but increasing infoglut and present state-of-the-art limitations still leave considerable room for improvement in this arena. A search engine may be 70 percent effective, but if yields 10,000 hits, its value to the user may be limited.

A book is a mirror: If an ass peers into it, you can't expect an apostle to look out. (Georg Christoph Lichtenberg, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 70.)

Content-Oriented Validity—see Criterion-Referenced Validity

A technique for assessing the validity of a measurement by showing there is evidence that the items constituting the instrument have complete and representative coverage of the factor being measured. Two techniques are face validity and sampling validity (IRMC Measuring Results of Organizational Performance Course).

One of the great presidents of Harvard, Charles William Eliot, was born with a serious facial disfigurement. Later when the tragic truth became known to him, his mother said, "My son, it is not possible for you to get rid of this handicap. We have consulted the best surgeons, and they say nothing can be done. But it is possible for you, with God's help, to grow a mind and soul so big people will forget to look at your face." (Quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 165.)

Context

The relevant environment surrounding information or knowledge that explicates its meaning and reduces ambiguity; the interrelated conditions in which something exists or occurs (e.g., history, associations, and subject matter experience). Context is essential in analyzing and understanding content. Situation comedies, for instance, even in Elizabethan times (e.g., Shakespeare's comedies) often base their humor upon conversations overheard without the context. They readily demonstrate the perils of attempting to act upon content without the proper, associated context. Modern television programs frequently use the same technique.

The part of philanthropist is indeed a dangerous one; and the man who would do his neighbor good must first study how not to do him evil, and must begin by pulling the beam out of his own eye. (George MacDonald, *Lilith*, ch. XIV, from *Phantastes and Lilith*, Eerdmans Publishing, Grand Rapids, MI, 1964, p. 250.)

Context(ual) Sensitivity

The ability (of a KM system) to evaluate its context when analyzing associated content.

If you are an executive and you are not making the people who work for you feel magical, you are not doing your job. (Robert Moore and Douglas Gillette, *The King Within*, William Morris & Co., New York, 1992, p. 245.)

Continuity Of Operations Plan (COOP)—see Disaster Recovery

A study showed that “corporations that lose access to their data for 10 days are at risk of failing.” “Two 1995 studies by Oracle Corp. and *Datamation* showed that average businesses lost between \$80,000 and \$350,000 per hour of unplanned outages. After the 1993 World Trade Center bombing, 145 of 350 businesses which were located in the building had to close down within a year because they had no redundant IT structure” (IRMC Managing Networked Security in a Networked Environment Course). See the Clinton Administration’s policy on managing complex contingency operations (PDD-56) of 5/97: <http://www.fas.org/irp/offdocs/pdd-56.htm> (IRMC Assuring the Information Infrastructure Course). Also see the FEMA COOP Federal Preparedness Circular (FPC-65) at <http://www.fas.org/irp/offdocs/pdd/fpc-65.htm>. There are also excellent business continuity plan software packages available from commercial vendors. A business impact analysis also can help implementation. The major elements of a COOP are: plans and procedures; identification of essential functions; delegations of authority; orders of succession; alternate facilities; interoperable communications; vital records and databases; and tests, training, and exercises. Provisions should be made for an uninterruptible power supply (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course). Redundancy is quite cost-effective. COOPs provide the necessary discipline and processes to enable an organization to protect itself from vulnerability. A well-written, periodically tested, and updated COOP is the cornerstone for long-term organizational operation under a variety of challenges and attacks. Organizational survival can depend upon the COOP and its proper implementation.

Think to yourself that every day is your last; the hour to which you do not look forward will come as a welcome surprise. (Horace, iv, 13, *Epistles*, Book 1 from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 123.)

Contractor Off-The-Shelf (COTS)

Products (equipment, software, etc.) that are purchased from a contractor from inventory (off-the-shelf) as opposed to designed, developed, and produced especially for the individual customer. COTS items are, generally, widely and publicly available. They are usually proprietary and source code, for instance, is not available. COTS users are dependent upon the contractor for upgrades and maintenance. If COTS is modified (some call this MOTS), COTS changes will probably require tailoring the MOTS to reflect the COTS portions—reflecting the integration challenges of using COTS. COTS is a form of nondevelopmental item (NDI). Other types of NDI include government off-the-shelf (GOTS), which are items formerly created or produced by or for the government for which the government retains rights of reuse. While government contractors generally retain ownership of items created to government specifications, the government retains

the right to reuse (generally without royalties) without violating proprietary restrictions (if for government use only). Legacy systems are usually GOTS and may contain both COTS and GOTS subsystems and components. See Carney and Obendorf's "The Commandments of COTS: Still in Search of the Promised Land," *Crosstalk*, 1997, Vol. 10, No. 5, pp. 25-30; <http://stsc.hill.af.mil/CrossTalk/1997/may/commandments.html> (IRMC Advanced Software Acquisition Management Course).

I think we should leave the status quo as it is. (A "Yogi-ism" from Neal Pollock.)

Contrast Error

A type of rater error in which the rating of a subject is influenced by the recent rating of another subject that was extremely strong or extremely weak (IRMC Measuring Results of Organizational Performance Course).

Only a mediocre writer is always at his best. (W. Somerset Maugham, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 40.)

Control Group

A reference standard involving measurements obtained from a similar group that experienced another form of the intervention, an entirely different intervention, or no intervention at all (IRMC Measuring Results of Organizational Performance Course). When performing an experiment (intervention), a similar group is also selected which does not receive the change or intervention or receives a placebo (so the participants do not know that they are the control group but assume they are in the experimental group). Results from the control group are used as a benchmark or baseline against which the results of the experimental group can be compared to assess the effects of the experiment or intervention to determine if the results are statistically significant.

A salt doll once went to measure the depths of the ocean ... No sooner did it get into the ocean than it melted. Now who was there to report the ocean's depth? (Ramakrishna, quoted in *The Gospels of Sri Ramakrishna* by Swami Nikhilananda, Ramakrishna-Vivekananda Center, New York, 1942, p. 103, as quoted by Joseph Campbell in *The Inner Reaches of Outer Space*, Alfred Van der March-St. James Press, Toronto, 1986, p. 70.)

Control objectives for Information and related Technology (CobIT)

The Information Systems Audit and Control Foundation (ISACF) and Association's (ISACA) IT Governance Institute's initiative to research, develop, publicize, and promote an authoritative, up-to-date, international set of generally accepted IT control objectives for day-to-day use by business managers and auditors. It can be used to control IT investments, assure security/controls of IT services provided by internal or third parties, and substantiate auditor opinions and provide advice on internal controls. See <http://www.isaca.org> and <http://www.ITgovernance.org> or research@isaca.org 847-253-1545 (*CobIT Executive Summary*, July 2000, 3rd ed.). <http://www.isaca.org/cobit.htm> (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

Nothing is work unless you'd rather be doing something else. (Jacob Braude, *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 118.)

Convenience Sampling—see Verification

A subgroup is selected as the sample because of the ease with which data can be collected (IRMC Measuring Results of Organizational Performance Course).

There is always an easy solution to every human problem—neat, plausible, and wrong. (H. L. Mencken, quoted by Lawrence J. Peter in *The Peter Prescription*, William Morrow & Co., New York, 1972, p. 13.)

Conventional (Symmetrical) Cryptography—See Cryptography, Encryption, and PKI

An alternate name for symmetric cryptography. It is 100 to 1,000 times faster than public key encryption, but requires secure distribution of shared single keys, raising its costs and risks and limiting its use. The size and strengths of conventional cryptography do not directly relate to those of asymmetrical cryptography. For example, an 80-bit conventional key size is approximately equal to a 1,024-bit PKI key size in strength. A 128-bit conventional = 3,000-bit public key. (IRMC Managing Networked Security in a Networked Environment Course). For 10,000 users, the number of symmetric keys needed = $(n)(n-1)/2 = 50$ million; or the number of asymmetric keys needed = $2 \times n = 20,000$. The ratio of symmetric to asymmetric keys required is $(n - 1)/4$; in this case $(10,000 - 1)/4$ is slightly less than 2,500:1 (=50M/20k) (IRMC Advanced Information System Acquisition Course).

11. Sometimes, the fastest way to get to the end is to throw everything out and start over. (David Akin, professor, University of Maryland, "Akin's Laws of Spacecraft Design" [received via Internet e-mail] and confirmed by Dr. Akin dakin@umd.edu or DAKIN@SSL.UMD.EDU. See http://spacecraft.ssl.umd.edu/academics/akins_laws.html.)

Convergent Thinking and Divergent Thinking—see Strategic Thinking and Systems Thinking

A dichotomy of thinking styles which parallels many other human polarities such as: strategic programming versus strategic planning; analysis versus synthesis (or integration), inside the box and outside the box, Freud's conscious versus unconscious, Jung's personal unconscious versus collective unconscious, Myers-Briggs sensate versus intuitive, closed systems versus open systems, etc.

C. G. Jung Institute of Chicago: <http://www.jungchicago.org/> jung@aol.com.

Convergent thinking tends toward the usual and expected, toward retaining the known, learning the predetermined, and preserving what is; divergent thinking tends toward the novel and speculative, toward revising the known and explaining the undetermined. One favors certainty, the other favors risk. In modern Western society our education tends to be concerned with convergent thinking, rather than with the encouragement of divergent thinking. It transmits knowledge and examines for it. It provides some opportunity for creative work and thought, but does not examine for it. And there is always the hope that some inspiration will rub off on to the pupil from the teacher ... Existing knowledge is constantly being made redundant as new knowledge is gained. Our

students must learn how to go about revising this knowledge adapting the change. (Elliott Jaques, *Creativity and Work*, International Universities Press, Inc., Madison, CT, 1990, p. 158.)

Cookie

A short ASCII text file that is placed on the hard drive of an individual user's computer by some Internet sites. Cookies provide Web sites with user-specific information and preferences that can enhance the users' Web-surfing experience. However, when implemented and used inappropriately by Web sites, cookies can pose a threat to user privacy. Users can tailor their browser to refuse cookies, although that may affect use of some Web sites and preclude using others. Cookies are useful to business-to-customer firms performing CRM—tailoring the site and/or offerings to match perceived user preferences. Netscape introduced cookies in Navigator version 2.0. The original purpose was to track users through multiple HTTP requests.

http://www.netscape.com/newsref/std/cookie_spec.html for cookie specifications (IRMC Managing Networked Security in a Networked Environment Course).

Forecasting is the art of drawing useful conclusions from inadequate premises. (George Steiner, *Top Management Planning*, 1969, MacMillan & Co., New York, p. 203.)

Core Functions (Inherently Governmental Functions)

Functions that should be performed by government employees and not by contractors. With the advent of A-76 and outsourcing, emphasis has been placed on defining which functions, presently performed by in-house government workers, could be performed by nongovernment personnel (i.e., under contract to the government). GAO/GGD-92-11 of Nov. 18, 1991, states "the government should not contract out its responsibilities to serve the public interest or to exercise its sovereign powers." The government should maintain sufficient in-house capability to be thoroughly in control of the policy and management functions of an agency, and "government officials should be active throughout the decision-making process, and administration begins when the contractor's involvement in basic management functions is so extensive that an agency's ability to develop options other than those proposed by the contractor is limited." Inherently governmental functions should never be privatized, but may be outsourced to other government agencies. *OMB Circular A-76* lists some such functions. The Comptroller General has added (e.g., drafting and preparing responses to Congress and testimony) to this list. Core functions are reflected in the core skill set needed by government workers to perform these functions. Additional functions are needed to provide oversight of contractors performing noncore functions for the government (IRMC Advanced Information System Acquisition Course).

To lift a soul above its natural level is a dangerous act. Souls, like springs, have their natural sources, and to force them beyond is against nature and therefore a dangerous act. For when a soul is forced it seeks its own level again and disintegrates, being torn between upper and lower levels, and this is also dangerous. True wisdom it is to weigh and judge the measure of a soul and let it live where it belongs ... The soul of every creature must make its own shape, and none can compel another without hurting himself ... To teach is to invite the soul to heaven, but never to compel it. (Pearl S. Buck, *Pavilion of Women*, John Day Co., New York, 1946, pp. 294, 311.)

Corporate Yellow Pages

A listing of individuals, their expertise, and contact information. This tool can be useful in locating knowledgeable personnel within an organization. However, due to its impersonal nature, the difficulty of capturing and maintaining current information for its entries, personnel turnover, etc., its usage and value have been somewhat limited. An organization must determine if such a tool is cost-effective. An organizational wiring diagram or organizational chart with contact information may be sufficient to locate someone who can provide an appropriate contact point to the enquirer. A major tradeoff factor lies in the number of levels to be provided in the yellow pages, how it will be implemented (e.g., on an intranet), and the level of privacy to be maintained. Many organizations no longer provide extensive information on personnel and locations on open (Internet) sites.

Let each man exercise the art he knows. You cannot teach a crab to walk straight.
(Aristophanes, *Peace*, 421 B.C., l.1083 from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 91a.)

Correlation <http://www.surveysystem.com/correlation.htm>

A statistical technique determining the degree of relationship between two sets of scores for the same group of cases, where values approaching 1.0 indicate a strong positive relationship, values approaching -1.0 indicate a strong negative (inverse) relationship, and scores around 0.0 indicate a lack of relationship (IRMC Measuring Results of Organizational Performance Course). Correlation shows how similar two items or cases are. A positive correlation indicates a great amount of similarity (possibly dependence or possibly only synchronicity). A negative correlation indicates that the items are opposite in effect (still possibly, but inversely, dependent or only synchronistic). No correlation indicates a lack of relationship between the variables. For instance, in the Duke University studies in which subjects attempted to ascertain which of a set of cards was selected from a random sample, some subjects responses scored consistently higher than chance (positive correlation), some scored consistently lower than chance (negative correlation), and some scored at or about the chance level (no correlation).

Correlation analysis is the statistical measure used to calculate "derived importance." Correlation is a measure of the strength of the linear relationship between two items such as customer service and customer satisfaction. Items can be placed appropriately within a four-quadrant chart, whose quadrants are:

High satisfaction, low importance	High satisfaction, high importance
Low satisfaction, high importance	Low satisfaction, low importance

Each item has a dot/point placed within one of the quadrants. In this case, satisfaction is on the *y* (vertical) axis and importance is on the *x* (horizontal) axis (IRMC Measuring Results of Organizational Performance Course).

Occam's Razor, entiaproeter necessitaten non sunt multiplicanda (Principles are not to be multiplied beyond the necessary). (C. G. Jung, *The Structure and Dynamics of the Psyche*, CW8, Pantheon Books, New York, 1960, p. 186.)

Cost As an Independent Variable (CAIV)—see Earned Value Management

An acquisition reform-type initiative to change the emphasis in program management. Program managers generally juggle cost, schedule, and performance (including operability which some break out as a fourth factor). In the past, program managers tended to keep performance relatively constant and vary cost and schedule in response to overruns and schedule slippages. CAIV is an attempt to keep cost constant and shift changes to requirements and/or schedule in response to constant and/or declining Department of Defense budgets.

Rigsbee's Rule: The threat shrinks to match the dollars. (CAPT Clifford Rigsbee, USN, PMA264, NAVAIRSYSCOM, May 28, 1996.)

Cost-Benefit Analysis (or Benefit-Cost Analysis)

A model of evaluation which determines whether the financial benefits resulting from an intervention exceeds the dollar investment made in the intervention (IRMC Measuring Results of Organizational Performance Course). It is a simple form of decision theory based on the La Place method. It can serve as an initial hurdle in a successive hurdles evaluation of prospective investments. While money is generally used, utility theory could also be applied. Cost-benefit analysis is an approach to measure the cost effectiveness (i.e., efficiency) of proposed solutions.

Cost Analysis Strategy Assessment: http://www.dsmc.dsm.mil/con_main.htm
<http://www.logsa.army.mil/alca/casa/>

A pessimist is someone who complains about the noise when opportunity knocks. (Michael Levine, "Winning Words of Wisdom," *Bottom Line Personal*, 1996, Vol. 17, No. 10, p. 12.)

Council of Europe Convention—see European Union "basic principles ..."

Governs any information relating to an identified or identifiable individual; applies to public and private sectors; parties may refuse to share information with others whose laws do not provide equivalent protection, <http://www2.echo.lu/legal/en/dataprot/counceur/conv.html>, (IRMC Assuring the Information Infrastructure Course).

Satyagraha—the willingness to endure great personal suffering in order to do what's right ... what matters is that you do not hide from the consequences. You bear what must be borne. (Orson Scott Card, *Shadow of the Hegemon*, Tom Doherty Associates, New York, 2000, p. 322.)

Crackers

Crackers are malicious hackers who break into others' systems to cause harm or for illegal purposes. These include cyber terrorists (terrorists operating through the Internet), cyber extortionists (who blackmail financial organizations), and practitioners of information warfare.

The adage "Do unto others as you would have others do unto you" may be the source of a lot of anguish and misunderstanding if the doer and the done unto have different

styles. (Deborah Tannen, *That's Not What I Meant*, William Morrow & Co., New York, 1986, p. 40.)

Crawlers

Applications used to automatically scan unstructured data in a preselected media (Web sites, etc.), and map the data to a predefined taxonomy to give the data "meaning" in its context. The taxonomy then gives this unstructured data a "knowledge value" based on the preset classification in the taxonomy development. A crawler automatically indexes and identifies additional key concepts that can be searched by the knowledge worker (U.S. Army).

It usually takes me more than three weeks to prepare a good impromptu speech. (Mark Twain, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 24.)

Creative Abrasion

When a group of diverse individuals addresses a common challenge, each skilled person frames both the problem and its solution by applying mental schemata and patterns he or she understands best. The result is a cacophony of perspectives. In a well-managed development process, these varying perspectives foster creative abrasion, intellectual conflict between diverse viewpoints, producing energy that is channeled into new ideas and products.³ The creation of such intellectual ferment is important to innovation for a number of reasons. First, the more options offered (up to a point, of course), the more likely that a frame-breaking perspective will be available for selection. A certain "requisite variety" is desirable for innovation.⁴ Moreover, experimental research has demonstrated that a minority opinion offered during group decision making stimulates more innovative solutions to problems—even if the ultimate selection was not one specifically proposed from a minority viewpoint. Apparently, just hearing a very different perspective challenges the mindset of those in the majority sufficiently that they will search beyond what initially appears to be an obvious solution. This may be one reason that intellectually heterogeneous groups are more innovative than homogeneous ones. As a recent review of different types of group diversity concludes: "The diversity of information [that] functionally dissimilar individuals bring to the group improves performance in terms of creativity."⁵

For abrasion to be creative, it must be impersonal. After a review of relevant research, Lisa Hope Pelled suggests that group diversity based upon highly visible differences (gender, race, age) leads to more emotion-based disagreements, while more subtle forms of diversity (educational background, personality) are more likely to lead to intellectual disagreements.⁶ This model suggests that the more that diversity in tacit knowledge is sought from individuals selected because of readily observable differences, the more difficult it becomes to ensure that the tacit knowledge is heard, is valued, and is targeted towards the innovation. (Dorothy Leonard and Sylvia Sensiper, "The Role of Tacit Knowledge in Group Innovation," *California Management Review*, Berkeley, CA, Spring 1998, Vol. 40, Issue 3, pp. 112–132.)

Good-to-great management teams consist of people who debate vigorously in search of the best answers, yet who unify behind decisions, regardless of parochial interests. (Jim Collins, *Good to Great*, Harper Business, New York, 2001, p. 63.)

Criterion-Referenced Validity—see Content-Oriented Validity

A technique for assessing the validity of a measurement by determining the statistical relationship between the scores produced by the instrument for a group of subjects and another set of scores for the same group of subjects that are an acceptable indication of the factor being measured. Two techniques are concurrent validity and predictive validity (IRMC Measuring Results of Organizational Performance Course).

In every work of genius we recognize our rejected thoughts. (Ralph Waldo Emerson, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 194.)

Critical Asset Assurance Program (CAAP)—see Critical Infrastructure Protection and Defense-Wide Information Assurance Program

Identifies critical assets (physical and information) by sector, military plan/op, site, installation, or unit; provides business case for asset assurance investments; reconciles component and sector assurance activities; coordinates engineering standards for physical assurance designs, practices, and countermeasures; provides integrated risk management decision support environment (The DoD Critical Infrastructure Protection [CIP] Plan [FOUO] of 11/18/98, p. 23. See DoDD 5160.54 Critical Asset Assurance Program [CAAP] January 20, 1998) (IRMC Assuring the Information Infrastructure Course).

After Jones joined the Army, he was assigned to the induction center, where he advised new recruits about their government benefits. One of these was the availability of government GI insurance. It wasn't long before his Captain noticed that Jones had an almost perfect record for insurance sales. So one day the Captain decided to attend the induction lecture and listen to Jones's sales pitch. Jones explained the basics of the GI Insurance to the new recruits, and then said, "If you have GI Insurance and are killed in battle, the government pays \$200,000 to your beneficiaries. If you don't have GI insurance, the government has to pay only a maximum of \$6,000." "Now," he concluded, "which bunch do you think they are going to send into battle first?" (Received as Internet e-mail; a story—not stated as factual.)

Critical Infrastructure Assurance Officer (CIAO)—see Presidential Decision Directive-63

The CIAO is responsible for the protection of all of an organization's critical infrastructures. The CIAO establishes procedures for vulnerability assessments performed on computer and physical systems. The Department of the Navy (DON) CIAO was appointed by Under Secretary of the Navy Memorandum (August 26, 1999). The DON CIAO chairs the DON Critical Infrastructure Protection Council. A CIO may also serve as CIAO or have a subordinate perform that function. The CIAO must address organizational critical infrastructure protection (CIP).

The CIAO Council will provide executive oversight for the implementation of the DoD CIP and advice to the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence regarding responsibilities as CIAO, CIO, and CIP Functional Coordinator for National Defense (The DoD [CIP] Plan of November 18, 1998, pp. 16–17) (IRMC Assuring the Information Infrastructure Course). CIAO guidance includes 10 related tasks: vulnerability analysis, remedial plan, warning, response, reconstitution, education and awareness, R&D, intelligence, international cooperation, and legislation and budget (IRMC Advanced Software Acquisition Management Course).

Morris the loudmouth mechanic was removing the cylinder heads from the motor of a car when he spotted the famous heart surgeon Dr. Michael DeBakey, who was standing off to the side, waiting for the service manager to come take a look at his Mercedes. Morris shouted across the garage, "Hey DeBakey! Is dat you? Come on ova' here a minute." The famous surgeon, a bit surprised, walked over to where Morris the mechanic was working on the car. Morris straightened up, wiped his hands on a rag and asked argumentatively, "So Mr. Fancy Doctor, look at dis here work. I also open hearts, take valves out, grind 'em, put in new parts, and when I finish dis baby will purr like a kitten. So how come you get da big bucks, when you an' me is doing basically da same work?" Dr. DeBakey leaned over and whispered to Morris the loudmouth mechanic. "Try doing it with the engine running." (Received via Internet e-mail. Most likely an apocryphal story or Urban Legend. Not found on various Urban Legend sites, however.)

Critical Infrastructure Protection (CIP)—cf. Critical Asset Assurance and Defense-Wide Information Assurance Programs

CIP is the function or discipline to protect critical assets and systems essential to operate the enterprise. The term infrastructure includes systems and assets that enable the Department of the Navy (DON) to accomplish its war fighting mission and core business processes. DON CIP leverages efforts of the Department of Defense critical infrastructure protection implementation staff and of individual organizations through integrated physical and cyber and on- or off-base infrastructure protection strategies. CIP efforts normally include a disaster recovery plan and continuity of operations plan (COOP). cf. *Federal Preparedness Circular FPC 65*, Federal Emergency Management Agency (FEMA), July 26, 1999. "CIP determines interrelationships among assets (both physical and information) within sectors and among sectors" (The DoD Critical Infrastructure Protection [CIP] Plan [FOUO] of November 18, 1998, p. 23; "Critical Foundations" summary report accompanying the President's Commission on Critical Infrastructure Protection [PCCIP], October 1997, "Cybernation: The American Infrastructure in the Information Age—A Technical Primer on Risks and Reliability," Executive Office of the President, Office of Science and Technology Policy, Washington, DC, April 1997 <http://www.whitehouse.gov/news/releases/2001/10/20011016-12.html>). Executive Order 13010, *Critical Infrastructure Protection*, designates critical infrastructures as: telecommunications; electric power; gas and oil, storage and transportation; banking and finance; transportation; water supply; emergency services; and government services. See "CIP: Fundamental Improvements Needed to Assure Security of Federal Operations" (statement of Jack L. Brock, Jr., before the Subcommittee on Technology, Terrorism, and Government Information, Committee of the Judiciary, U.S. Senate, October 6, 1999, GAO/T-AIMD-00-7, GAO 1999), and "Legal Foundations: Studies and Conclusions," (*Report to the President's Commission on Critical Infrastructure Protection*, 1997; also see hoaxes on the Electronic Pearl Harbor debate (IRMC Assuring the Information Infrastructure Course).

<http://www.info-sec.com> <http://www.infowar.com>.

For of all sad words of tongue or pen, the saddest are these: "It might have been!" (John Greenleaf Whittier, *Maud Miller*, 1856, stanza 53.)

Critical Infrastructure Protection Council (CIPC)

The Department of the Navy (DON) Critical Infrastructure Protection Council was created by Under Secretary of the Navy Memorandum of August 26, 1999. The council determines the necessary efforts to institute critical infrastructure protection throughout the DON, contributes subject matter experts to support Office of the Secretary of Defense sector critical infrastructure assurance officers, identifies resource sponsors and asset owners responsible for DON critical infrastructures, and recommends resource actions to support implementation (*Glossary of IM/IT & KM Terms*). See The DoD Critical Infrastructure Protection (CIP) Plan (November 18, 1998, p. 23) (IRMC Assuring the Information Infrastructure Course).

The unexamined life is not worth living. (Socrates, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 283.)

Cross-Tabulation

A statistical technique that displays the number or percentage of cases that appears in each row, column, and cell of a two-dimensional table (IRMC Measuring Results of Organizational Performance Course).

Why do we do what we do and why do it the way we do? Why ignore what is in favor of what should be? (Eliminate assumptions in Present Processes. Reinvention Versus Improvement.) (Michael Hammer and James Champy, *Reengineering the Corporation*, Harper Business, New York, 1993, p. 32.)

Cryptanalysis

The science of analyzing and breaking secure communications. It includes analytical reasoning, mathematical tools, pattern recognition, patience, determination, and lots of luck! Cryptanalysts are sometimes called attackers. Cryptology includes both cryptography and cryptanalysis (IRMC Managing Networked Security in a Networked Environment Course).

BBR: Burn Before Reading.

Cryptography—cf. Public Key Encryption and Encryption

The art of protecting information by transforming (encrypting) it into an unreadable format, called cipher text. Only those who possess a secret key can decipher (or decrypt) the message into plain text. Encrypted messages can sometimes be broken by cryptanalysis (also called code breaking). Presently, the state-of-the-art technique is public key infrastructure (PKI). Secure sockets layer (SSL) is used in business-to-customer transactions to protect user information. Cryptography is used to protect e-mail messages, credit card information, and corporate data. Formerly, it was used to protect military communications and intelligence especially during wartime. American success at cryptanalysis during World War II led to victories over adversaries. The U.S. Marine Corps' Navaho code talkers utilized an unusual and virtually unbreakable method to protect U.S. communications during that war. The Captain Midnight decoder ring provided children with an early demonstration of cryptography. Parents also use pig

Latin as a form of encoding to pass messages undecipherable by small children. However, the art goes back at least to Julius Caesar, who used a letter transposition cipher to protect messages sent on the battlefield.

If you cannot—in the long run—tell everyone what you have been doing—your doing has been worthless. (George MacDonald, *Phantastes and Lilith*, Eerdmans Publishing, Grand Rapids, MI, 1964, p. 11.)

Cryptology

The art and science of encrypting/decrypting data (cryptography) and breaking encryptions (cryptanalysis). See encryption (IRMC Managing Networked Security in a Networked Environment Course).

My work is so secret, I'm not allowed to know what I'm doing. (A sign on Jim Howard's desk at the Naval Air Development Center [NADC], Warminster, PA, 1975.)

Culture

The interrelated set of features characteristic of a specific group of people. Culture is one of the definitive factors or threads holding a group together and allowing communications and understanding through a shared set of contexts (e.g., language, perspectives, values, routines, beliefs, rituals, social forms, ways of acting or being, etc.). A group's culture is the human part of its collective environment. It affects members' patterns of behavior (consciously and unconsciously).

It is only the few who clearly express the spirit of the present in any age. (C. G. Jung, *Civilization in Transition*, CW10, Princeton University Press, Princeton, NJ, 1964, p. 115.)

Customer Relationship Management (CRM)

Now considered part of collaborative commerce, CRM is a set of processes through which an enterprise seeks to better serve its customers (and increase sales and profitability) through tailoring its activities to perceived customer preferences. Thus, an organization such as Amazon.com collects information on customer background and activities in order to predict what books or other sellable items the company might offer to that particular customer. Some people object to the collection of such information on the basis of privacy concerns. This is especially relevant when companies sell such information without permission of the individual involved. Thus, today, many companies that sell directly to the public, for instance, provide statements on Web sites and hard copy literature assuring customers that they will not sell (or share) such personal information. Other companies enquire if the customer would allow or object to distribution of information. Of course, the best information may be completely within the company's control (e.g., the nature of prior sales to a particular customer). Nevertheless, this information may be limited and not statistically relevant. Many companies ask their customers to fill out questionnaires to enlighten them about the nature and intentions of the customers. Some offer rewards (e.g., entry in a sweepstakes) for participating in the survey. Car rental companies establish customer profiles and even default conditions—such that their computer can automatically assign a type of vehicle when a reservation is made. The customer would only need to identify deviations from the norm. CRM works

best for both customer and seller when a long-term relationship is established. It is not desirable, however, for those persons seeking to maintain anonymity. It is likely that individual reactions to CRM are highly correlated with the Myers-Briggs Type Indicator (MBTI) personal preferences of those individuals.

From Gary Hacker's *HR Metrics News* consolidated from Issues 1-5 (OPM):

Using Measures To Connect Strategy With Customers by Robin Lawton:
<http://www.imtc3.com/measures2.html> 6/02. "Whether we're talking about the mass of a star, academic aptitude, pollution, organizational success or customer satisfaction, our evolution in understanding a topic is marked by our ability to measure it."

Dwelling in a concept can be understood as a dramatic shift of perspectives: You change from "looking at" to "looking with" the concept ... If they commit themselves to "looking with the customer at his problems" rather than to the pleasantly aloof "looking at the customer with his problems," they start to see the world through a new lens. (Georg von Krogh, "Care in Knowledge Creation," *California Management Review*, Berkeley, CA, Spring 1998, Vol. 40, Issue 3, pp. 133-153. See²⁷ M. Polanyi and H. Prosch, *Meaning*, University of Chicago Press, Chicago, 1975.)

Customer Satisfaction

A measurement or indicator of the degree to which customers or users of an organization's products or services are pleased with those products or services, typically measured by an attitude questionnaire (IRMC Measuring Results of Organizational Performance Course). Most measures (e.g., surveys or questionnaires) actually measure customer perceptions that may or may not match reality. Nevertheless, the customer's reality is what counts. Sometimes this feedback results in better communications with customers and better public relations rather than changes in internal processes or how one does business from a closed system perspective. In other words, changing an outcome does not always entail changing an output. Customer satisfaction = performance ÷ expectations.

The vast majority of people are quite incapable of putting themselves individually into the mind of another ... The most we can do, and the best, is to have at least some inkling of his otherness, to respect it, and to guard against the outrageous stupidity of wishing to interpret it. (C. G. Jung, *Two Essays on Analytical Psychology* CW7, Princeton University Press, Princeton, NJ, 1966, pp. 220-221.)

CXOs

This is a generic term used to refer simultaneously to members of the set of executives having similar acronyms that only vary in the middle of three characters surrounded by "C" and "O." Thus, it includes: CEOs (chief executive officers), CFOs (chief financial officers), CIOs (chief information officers), CKOs (chief knowledge officers), CLOs (chief learning officers), COOs (chief operating officers), CPOs (chief planning officers), etc. It does not include chief petty officers or (usually) chief privacy officers.

From Gary Hacker's *HR Metrics News* consolidated from Issues 1-5 (OPM):

How CEOs Find Often-Elusive Answers to the Measurements that Matter by Candace Walters: <http://www.hrworks-inc.com/art-nov242000.html> 4/02. "Where do CEOs go to learn the most vital insights about running their companies?"

What the CEO Thinks You Know by Kevin Wheeler: http://www.glnresources.com/columns/What_CEO_Thinks.htm 5/02. "There is a common language used by top-level managers in every company, and these managers assume you can speak that language. It is a language centered on business concepts and a handful of assumptions they make daily."

The Executive exists to make sensible exceptions to general rules. (Elring E. Morison)

Cybercash

A method for making electronic purchases using the cybercash organization. To use cybercash, a customer chooses the item being purchased, the merchant sends an electronic invoice to the purchaser, customer okays the invoice, a MIME message opens the customer's wallet and sends encrypted credit card information to the merchant, merchant signs (enters an identification number) and sends to the cybercash server, cybercash verifies the signatures and sends the credit card information to the merchant's bank, the merchant's bank sends it to the customer's bank or clearance center, cybercash sends an elex receipt with credit card information, and a confirmation is sent to the customer.

Money speaks sense in a language all nations understand. (Mrs. Aphra Behn, 1640–1689, *The Rover*, Part II, Act I, from *The Oxford Dictionary of Quotations*, Oxford University Press, New York, 1980, p. 38, No. 18.)

Cyberlaw, Cyber Attack, and Computer Crime—see Anti-Terrorism Act, Cable Communications Policy Act, Communications Assistance to Law Enforcement Act, Computer Fraud and Abuse Act, Computer Fraud and Hacking Act, Electronic Communications Privacy Act, Foreign Intelligence Surveillance Act, information warfare, Video Privacy Protection Act, Health Insurance Portability and Accountability Act, Privacy Act, and Wiretap Statute

See Mark Rasch's "Criminal Law and the Internet," *The Internet and Business, A Lawyer's Guide to the Emerging Legal Issues*, (Joseph Ruth, Ed., The Computer Law Association, 1996 <http://cla.org/RuhBook/chp11.htm>) and Ethan Katsch's "Cybertime, Cyberspace and Cyberlaw" (*Journal of Online Law*, College of William and Mary, Wythe School of Law, 1995). A Cable News Network interactive survey on January 19, 1999) asked, "What should be the proper response to a cyber attack?" received the following results: retaliate in kind, 82 percent (6,334 votes); report to authorities, 15 percent (1,153 votes); and ignore, 3 percent (259 votes). The magnitude of the threat: 80–100 DoD intrusions/day; 67 percent success rate with only 4 percent detected; more than 3,700 incidents were handled by the Computer Emergency Response Team in 1998, a 65 percent increase since 1996; more than 120 countries have computer attack capabilities, one-third of all international terrorist incidents are aimed at the United States; more than 50 natural disasters occur in the United States annually; 300 percent increase in FBI WMD criminal cases since 1996; 60 percent of companies have experienced financial losses due to cyber

crime (IRMC Assuring the Information Infrastructure Course). See <http://www.pbs.org/wgbh/pages/frontline/shows/hackers/interviews/christy.html> and <http://www.cybercrime.gov/> (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course). http://www.oit.umass.edu/publications/at_oit/Archive/fall00/katsch&rifkin-mediate.html.

Knowledge is difficult to measure because it is not scarce in the traditional sense. The defining quality of information-intensive environments is an abundance, and not a scarcity, of information. However, as the noted psychologist and economist Herbert Simon has suggested, "What information consumes is rather obvious; it consumes the attention of its recipients. Hence a wealth of information creates a poverty of attention, and a need to allocate that attention efficiently among the overabundance of information sources that might consume it." If—in the information age—information and knowledge are not scarce but abundant, and if it is the attention of the information-processor that is the real scarce resource, then in measuring the knower, we are valuing a scarce resource after all. (Rashi Glazer, "Measuring the Knower: Towards a Theory of Knowledge Equity," *California Management Review*, Berkeley, CA, Spring 1998, Vol. 40, Issue 3, pp. 175–194.)

CyberProtect, (CyberProtect exercise: <https://iase.disa.mil/> to get CDs from Defense Information Systems Agency) iase@ncr.disa.mil

This is a simulation of a LAN system aimed at developing the user's ability and understanding of the interactions and effects of information security techniques and devices versus possible attacks upon the system. Users have four rounds (quarters of the year) in which they take a given budget and purchase a number of possible protective efforts (at varying capability levels and prices). Then several random attacks are conducted against the student's designed system and results are displayed with a score. The simulation is continued through all four quarters to complete the year with a resulting overall score. Those scoring 90 percent or higher are eligible to receive a certificate of completion. The program is available from the Defense Information Systems Agency on a CD and is used in the IRMC Managing Networked Security in a Networked Environment Course.

When in doubt, estimate; in an emergency, guess. But be sure to go back and clean up the mess when the real numbers come along. (David Akin, professor, University of Maryland, "Akin's Laws of Spacecraft Design" [received via Internet e-mail] and confirmed by Dr. Akin dakin@umd.edu or DAKIN@SSL.UMD.EDU. See http://spacecraft.ssl.umd.edu/academics/akins_laws.html.)

Cyberspace

The domain of the Internet and World Wide Web. Cyberspace maps: <http://www.cybergeography.com/atlas/atlas.html>.

The propagandists of cyberspace have a tendency to speak in terms of discontinuity. The new, they always insist, will simply sweep away the old, so they confidently predict that hypertext will replace the book. (Here they might do well to pay attention to *The New York Times*' confident prediction in the 1930s that the typewriter would replace the pencil. The pencil seems to have won that particular struggle.) Or, as in the issue at stake here, the prediction is that communications technology will sweep away the firm. (John Seely Brown

and Paul Duguid, "Organizing Knowledge," *California Management Review*, Berkeley, CA, Spring 1998, Vol. 40, Issue 3, pp. 90-111.)

Cybrarian

A librarian for electronic (including multimedia) materials. A cybrarian utilizes and shares information literacy skills to enable users to locate and access knowledge, information and data, both internal and external to the organization. A prime tool for cybrarians or individuals performing such functions (possibly temporarily or for their own use only) is the Department of the Navy Chief Information Officer's Information Literacy Toolkit CD.

What's the long pole in the tentative? (Neal Pollock, April 12, 2000.)

Note: below is a small and partial list of resources available on the Web. No endorsement or criticism is extended either by inclusion or noninclusion of sites. It is simply a sample.

General Search Tools

<http://www.yahoo.com/> has own search.com/search; <http://www.yellowpages.com>

<http://www.yellowpages.msn.com>

<http://www.google.com/>

Alta Vista search engine: <http://www.altavista.digital.com/>.

Finding People/Places

Find people: <http://www.whowhere.lycos.com/Phone>

Find people: <http://www.lycos.com/peoplefind/>

Zip Code search: <http://www.usps.gov/ncsc/>

<http://www.yahoo.com/search/people/email.html>

Old high school classmates: <http://www.classmates.com>

Search by name or e-mail address: <http://people.yahoo.com/>

White Pages Search (USA): <http://www.555-1212.com> to look up phone numbers

Reverse lookup: http://www.555-1212.com/white_us.htm.

Finding Information

Weather: http://www.msnbc.com/news/WEA_Front.asp

English-language newspapers/magazines around the world: <http://www.ecola.com/>

Libraries, news, encyclopedias, atlases, maps and more:

<http://www.libraryspot.com/>

>629 dictionaries and glossaries: <http://www.onelook.com>

Dictionaries: English, computing, rhyming, pronunciation and word translation into foreign languages: <http://www.itools.com/research-it/research-it.html>

Access all info/log on to online accounts w/single p/w:

<http://www.accountminder.com>.

Government

Locating government and business information: <http://www.fedworld.gov/>

Government Officials Online: <http://www.whowhere.lycos.com/GovtPages>

Info/links to all state governments and related resources: <http://www.50states.com/>

National Defense University Library: <http://www.ndu.edu/library/library.html>

DTIC documents; Science and Technology (S&T): <http://www.dtic.mil/>.

Medical

Doctors of medicine/osteopathy: <http://www.ama-assn.org/aps/amahg.htm>

Information on medical conditions/procedures: <http://www.AnswerMeds.com>

Plain-talk descriptions, searchable by surgery name or medical condition:

<http://answermed.com/>

Quality ratings on hospitals/physicians/health plans/nursing homes/home health agencies/hospice programs: <http://www.healthgrades.com>

Internet Drug Index easily searchable: <http://www.rxlist.com>

Signs and Symptoms: Search engine to research your symptoms:

<http://www.ibionet.com>.

Travel

Airport Information about ground transportation, shops, services, hotels and terminal maps: <http://www.quickaid.com/>

Traffic and road construction reports: <http://www.trafficstation.com>

DoD Bus Service: <http://www.dtic.mil/ref/busservice.html>

Getting Through Customs: What to avoid wearing, saying, or doing to prevent offending or confusing people when traveling abroad:

<http://www.getcustoms.com/omnibus.html>

ATM Finder for VISA[®]: http://visaatm.infonow.net/bin/findNow?ONE=1&CLIENT_ID=VISA_USA&LOCATOR=VISA_USA&TYPE=PERSONAL

ATM Finder for MasterCard[®]:

<http://www.mastercard.com/cardholderservices/atm/>

Driving Directions: <http://www.mapquest.com/>

Washington Metropolitan Area Transit Authority (WMATA) (Metrobus/Metrorail service): <http://www.washingtonpost.com/wp-srv/local/longterm/metro/front.htm>

State Department warnings: http://travel.state.gov/travel_warnings.html

Foreign travel briefs: <http://iweb.spawar.navy.mil/services/security/docs/FP-ATBriefings.htm>

Center for Disease Control—world diseases for travelers:

<http://www.cdc.gov/travel/index.htm#Geographic>

State Department W/Form DSP-11 and info on Passports/Visa's:

http://travel.state.gov/passport_services.html

No-fee Passport application: <http://web1.whs.osd.mil/forms/DD1056.PDF>

U.S. Health Service advisories around the world:

<http://www.cdc.gov/travel/index.htm#Geographic>

Latest per diem rates: <http://www.dtic.mil/cgi-bin/cpdrates.pl>

<http://www.dtic.mil/perdiem/trvlregs.html>

World Weather: <http://www.usatoday.com/weather/basemaps/wworld1.htm>.

Finding Items

Whole Internet catalog: <http://www.pimall.com/nais/bk.w-incat.html>

<http://archive.ncsa.uiuc.edu/SDG/Software/Mosaic/MetaIndex.html>.

Books

Book Finder Service: <http://www.bookfinder.com/>

Out-of-Print Books: search@harvestbooks.com

Book Search: <http://www.addall.com>

Amazon: <http://www.any-book.com/>

Borders: <http://www.borders.com>

Amazon.com!: <http://www.amazon.com/exec/obidos/stores/usanetm>.

Other Products/Services

<http://search.cnet.com/Single/0,7,150422,00.html>

<http://www.worldpages.com>

<http://www.switchboard.com>

<http://www.bigbook.com>

Guide to investing resources on the Web: <http://www.cyberinvest.com>

Savings bond redemption values: current value of any saving(s) bond issued from May 1941 to present: <http://app.ny.frb.org/sbr>

Theater/music/art events nationwide and tickets to events in hundreds of cities:

<http://www.culturefinder.com>

Movie review search engine: <http://entertainment.msn.com/movies/reportcard/>

Consumer insurance guide: <http://www.insure.com>

Reviews of top-rated products: <http://www.consumersearch.com>

AAA shopping connection: <http://www.aaamidatlantic.com>.

C⁴ISR Integration Support Activity (CISA)

CISA prepared the *Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C⁴ISR) Architecture Framework* (CISA-0000-100-96, June 1996). This is the Department of Defense IT architecture (ITA) per the Clinger-Cohen Act and Office of Management and Budget Memo M-97-16

<http://www.whitehouse.gov/omb/memoranda/m97-16.html>.

The wise man hears one word—and understands two. (Jewish saying, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 505.)

D

Data

1) A representation of facts, concepts, or instructions in a formalized manner suitable for communication, interpretation, or processing by humans or by automatic means (FIPS Pub 11-3). Software has two general categories: data and programs. Programs are collections of instructions for manipulating data. Data are inputs which, when processed and arranged (clustered/clumped) by people, become information. Thus, data is a low level of abstraction type of content whereas programs are a form of processing. To a computer, data is a series of 1's and 0's. Assembler and Compiler programs translate this data in information usable by the computer.

2) Data also refers to documents deliverable by a company under contract. This type of data is described in a Contract Data Requirements List (CDRL) that is normally part of a specific contract. Data Item Descriptions (DIDs) are generic descriptions of deliverable data items.

We are in a civilization which suffers from too much superficial verbosity and thoughtless wordiness. (Mary-Louise von Franz, *Individuation in Fairytales*, Spring Publications, Dallas, TX, 1982, p. 156.)

Data Administration—see Data Management and Integrated Definition for Information Modeling

"According to the American National Standards Institute (ANSI) IT Dictionary, data administration involves the performance of functions such as specifying, acquiring, providing, and maintaining the data of an organization." This is slightly different from their definition of data management ("functions in data processing systems that provide access to data, perform or monitor the storage of data, and control input/output operations"), but people often equate data administration and management. Data administration includes developing policies/procedures, strategic planning/resource management, enterprise architecture, standards, repositories (metadata), reusable software modules, distribution, warehouse management, quality/security for data. Functionaries include: the Department of Defense (DoD) data administrator, functional data administrators, and component data administrators. The DoD data architecture includes the DoD data model (DDM) (IRMC Advanced Information System Acquisition Course) <http://www.c3i.osd.mil/bpr/bprcd/484b.htm>.

Confucius came upon a woman who was weeping bitterly by a grave. The Master pressed forward and drove quickly to her; then he sent Tze-lu to question her. "Your wailing," said he, "is that of one who has suffered sorrow on sorrow." She replied, "That is so. Once my husband's father was killed here by a tiger. My husband was also killed, and now my son has died in the same way." The Master said, "Why do you not leave this place?" The answer was, "There is no oppressive government here." The Master then said, "Remember this, my children: oppressive government is more terrible than tigers." (Confucius, *The Wisdom of Confucius*, Peter Pauper Press, Mt. Vernon, NY, 1963, p. 38.)

DataBase (DB)

A collection of interrelated data, often with controlled redundancy, organized according to a schema to serve one or more applications; the data are stored for use by different programs or applications. There are various types of databases depending upon the schema used to arrange the data. The primary types include: hierarchical (in a table of contents type rigid hierarchy), relational (including multiple relations between entries—similar in appearance to Microsoft Excel flat files that can be arranged and re-arranged by selection of appropriate columns or pivoted to attach related tables to one another), object oriented (in which a particular principle has all relevant data attached directly to it—a clustering relationship for example), and object relational (placing object-oriented entries into a relational arrangement).

File-based (flat files) are merely collections of files accessed by application programs with separate and isolated (unshared) data. They are subject to data duplication and inconsistency, application dependencies, incompatibilities, etc. Network databases support relationships among the data through linked list structure with subordinated records linked to more than one owner. Relational DBs (RDBs) are very popular, easy to use, and data independent, but can be complex, slow to search and access, and can have redundancies. Object-oriented DBs (OODBs) include computer-aided design and manufacturing (CAD/CAM), computer integrated manufacturing (CIM), computer-aided software engineering (CASE), geographic information systems (GIS), science and medicine, document storage and retrieval. They apply object oriented programming (OOP) to DBs. They handle abstract types of data (multimedia) well, better model the real world, are portable and reusable, but they are immature, complex, and less relevant to most business applications. Object-relational DBs (ORDBs) combine many of the advantages of OODBs and RDBs and may replace the latter (ANSI SQL3 standard of 1999), but have high storage requirements. See also data warehouse. Often the term database is used even if the contents are actually information or knowledge. A data definition language (DDL) defines what types of data will be recorded in the DB; a data manipulation language (DML) is used to query the database, store, and update it. See Thomas Bruce's *Designing Quality Databases with IDEF1X Information Models* 1992, Dorset Publishing, New York; The Business Intelligence and Data Warehousing Glossary (<http://www.sdgcomputing.com/glossary.htm>); (DoD 8320.1-M, *Data Administration Procedures*); and National Committee for Information Technology Standards. Databases are supplied by Informix, Microsoft, Oracle, and Sybase. They can also be made Web accessible per the Internet Web Show of 1996: "Understanding Web Databases" (IRMC Data Management Strategies and Technologies Course). http://ourworld.compuserve.com/homepages/Ken_North/.

History is what we *choose* to remember. (Rodger Kamenetz, *The Jew in the Lotus*, Harper, San Francisco, 1994, p. 251.)

DataBase Management System (DBMS)

The software that is used to store, access, and manage data. Can also include a system that provides the functionality to support the creation, access, maintenance, and control of databases and that facilitates the execution of application programs using data from these

databases (the DMSO *Glossary of Modeling and Simulation Terms*). A DBMS may also maintain data integrity and invoke tools to interrogate and analyze the contents of databases, process transactions, backup and recover, validate, monitor, and secure databases (per National Committee for Information Technology Standards). DBMS components include: design tools, run time, DBMS engine, physical management, metadata, and a database. However, DBMSs are expensive (high overhead costs), complex, not suitable for all applications, single points of failure, and potential locus of security breaches (IRMC Data Management Strategies and Technologies Course).

The trouble with the future is that it usually arrives before we are ready for it. (Arnold H. Glasgow, quoted in *Europe 1992*, Defense Systems Management College, Ft. Belvoir, VA, September 1990, p. 90.)

Data Density—see Information Density and Knowledge Density

The percentage of a communication consisting of data as opposed to information or knowledge (or wisdom). Computers have high data density, philosophers (hopefully) have high knowledge density. Much work conversation is of high information density. Much confusion is caused by communications of high information or data density and low knowledge density, since the elements necessary for action are overlooked. They violate the rule of necessary and sufficient. While computers are generally viewed as communicating data, devices such as object-oriented databases and extensible markup language can convert data into information and, perhaps even, knowledge. The distribution of these densities indicate the amount of potential understanding in the communication. There is a parallel in the Defense Department's breakdown of research and development (R&D) projects. Their "program elements" (codes describing and itemizing these projects) begin with the number 6, another identifier code, and a three-digit project code. The second digit (identifier code) refers to the type or status of the project. Thus, 6.1 is pure research; 6.2 is exploratory development, etc. The higher the number, the more solid (near-term) the result. Similarly, data is purer (ones and zeros or alphabetical letters/bytes), but not actionable. Knowledge is actionable—similar to working models of R&D projects. Wisdom could be likened to production models where the design can be reused almost indefinitely.

Conversation, n.: A fair for the display of the minor mental commodities, each exhibitor being too intent upon the arrangement of his own wares to observe those of his neighbor. (Ambrose Bierce, *The Devil's Dictionary*, 1881–1911), from *The International Thesaurus of Quotations*, Rhoda Thomas Tripp, Harper & Row, New York, 1970, p. 111, entry 185, No. 3.)

When people talk to us about others they are usually dull. When they talk to us about themselves they are nearly always interesting. (Oscar Wilde, "The Critic as Artist," *Intentions*, 1881, from *The International Thesaurus of Quotations*, Rhoda Thomas Tripp, Harper & Row, New York, 1970, p. 113, entry 185, No. 38.)

Data Dictionary

A set of allowable metadata or data types with descriptions of each type. The Department of Defense uses the defense data dictionary system (DDDS) as the standard. A database of metadata. A document that defines each data entity (IRMC Data

Management Strategies and Technologies Course). A personal computer version of DDDS is called the PC access tool (PCAT). The Defense Information Systems Agency maintains the DDDS. These tools enable reuse of extant standard data elements and attributes. The Secure Intelligence Data Repository (SIDR) is a classified version of the DDDS (IRMC Advanced Information System Acquisition Course).

Walking down a country lane, a man heard his little granddaughter from the other side of a large bush. She was repeating the alphabet—A, B, C, D, E, but in an oddly reverent sort of way. He waited until she was through and then walked around to find her. "What were you doing?" he asked. "I was praying," she answered. "I couldn't think of the right words, so I just said the letters, and God will put them together into the words, because He knows what I was thinking." (Robert E. Goodrich, Jr., *What's It All About*, Fleming H. Revell Co., quoted by Jacob Braude in *New Treasury of Stories for Every Speaking Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, 1961, p. 300.)

Data Element

Any part of a data structure that is considered in context to be indivisible; for example, a name or date in a record, or an attribute associated with an object. In database usage, an identifier of an entity or of an attribute. A named relationship, viewed as an elementary unit, established between objects of the universe of discourse and words representing them (National Committee for Information Technology Standards) (IRMC Data Management Strategies and Technologies Course). See Defense Information Systems Agency memo "Implementing DoD Standard Data Elements," April 1996 and DoD 8320.1-M-1 Data Standardization Procedures, April 1998. Software Requirements Specification: http://www.disa.mil/coe/srs/srs_base/DATAANRT.DOC.

Words wonderfully obstruct the human understanding. (Sir Francis Bacon, "Idols of the Market Place," *The Novum Organum*.)

Data Encryption Standard (DES)

DES was the encryption standard in the government (National Institute of Standards and Technology, NIST) until computers advanced enough so that DES was insufficient in strength to protect ciphertext. It was originally issued as Federal Information Processing Standard (FIPS) 46 in 1977 by the National Bureau of Standards (predecessor of NIST). It was also approved as American National Standards Institute Standard X3.92-1981/R1987. It has 56-bit strength (using its other 8 bits for error detection). Triple DES (3-DES) was then developed to attain the strength needed to meet current cryptanalysis capabilities. DES is a symmetric type of cryptography, depending upon a single secret key. DES is described in the FIPS 46-2.

DES fact sheet: <http://csrc.ncsl.nist.gov/cryptval/des/des.txt>

FIPS 46.2: <http://www.cryptosoft.com/html/fips46-2.htm>, December 30, 1993.

Nothing in progression can rest on its original plan. We may as well think of rocking a grown man in the cradle of an infant. (Edmund Burke, 1727-1797, *Letter to the Sheriffs of Bristol*, 1777, from *The Oxford Dictionary of Quotations*, Oxford University Press, New York, 1980, p. 110, No. 13.)

Data Exploration

According to Bill Inmon (the father of the data warehouse), this is the process of analyzing data for relationships that have not been previously discovered. For example, the sales records for a particular brand of tennis racket might, if sufficiently analyzed and related to other market data, reveal a seasonal correlation with the purchase by the same parties of golf equipment. The classic story is the correlation, found by convenience stores, between beer and diapers. After noting this nonintuitive relationship, stores increased sales by co-locating these two items. Thus, data exploration (similar to exploratory development in research and development) can result in practical gains to the organization. Artificial intelligence is used in data exploration, especially neural networks and genetic algorithms.

No human being should learn from another. Each individual should develop his own powers to the uttermost, not to imitate those of someone else. (Hercule Poirot [Agatha Christie], *Lord Edgware Dies*, Dodd, Mead, New York, 1970, p. 129.)

Data, Information, and Knowledge (DINK)

Can also be referred to as KID (knowledge, information, and data), which places more emphasis upon higher levels of abstraction, which facilitate understanding and enable action.

Great people talk about ideas. Average people talk about things. Small people talk about people. (Dave Marinaccio, *All I Really Need to Know I Learned from Watching Star Trek*, Crown Publishing, New York, 1994, p. 61.)

Data Management (DM)

The management of data to ensure it is accurate, accessible, nonredundant, consistent, flexible, and secure. The Department of the Navy (DON) chartered a 1-year data management and interoperability (DMI) integrated product team (IPT) to investigate these arenas and recommend improvements. The DMI IPT made numerous recommendations including the establishment of a DMI repository (DMIR) to contain all DON metadata. This repository would provide an overview of the department's data, assist in standardizing data, and facilitate Section 8121 (or 8102) DoD chief information officer approvals. "The responsibility for definition, organization, supervision, and protection of data within an enterprise or organization" (DoD 8320.1, *DoD Data Administration*). DM includes identification, modeling, standardization, central planning, and implementation of data. Government Performance and Results Act and the Information Technology Management Reform Act require the chief information officer to perform DM. DM can improve accuracy, efficiency, and availability of data. It also facilitates decision-making, data sharing, interoperability, and understanding. It can reduce redundancy, duplication, storage requirements, and translators. It simplifies interfaces between systems (IRMC Data Management Strategies and Technologies Course). Strategies and Technologies: <http://members.aol.com/lpang10473/dms.htm> (IRMC Critical Information Systems Technologies Course).

Look after the molehills and the mountains will look after themselves. (Lawrence J. Peter and Raymond Hull, *The Peter Principle*, New York, 1970.)

Data Mart

Functional and separated subsets of a data warehouse. Inmon is considered the father of the data warehouse. Various subgroups in an organization supported by a data warehouse may create their own data marts which include relevant subsets of the data warehouse's contents in order to perform their own data analysis with tailored data mining or exploration tools. Multidimensional data marts are used for slicing and dicing numerical data, are sparsely populated, and rigidly structured. Relational online analytical processing data marts (ROLAPs) are more general purpose, include numerical and textual data, are used for general purpose decision support system analysis, have numerous indices, support star schemas, and can contain both detailed and summarized data. A load program periodically loads the data mart from the data warehouse (IRMC Data Management Strategies and Technologies Course).

Data Mart Contents^a

	Summary	Detailed
Ad hoc	lots	some
Prepared	some	lots

a. From Bill Inmon, op. cit.

What a word processor does to words is like what a food processor does to food. (Bob Buckley, ITC, New Orleans @ DMI IPT, September 20, 2000.)

Data Mining

Extracting meaningful information from masses of data (especially from a data warehouse) usually employing algorithms to correlate among many variables faster than humanly possible. Some people (though not Bill Inmon) include data exploration in data mining. For Inmon, data mining is limited to gathering data around a priori starting points or precepts/assumptions. It is very useful in testing theories, for instance, or proving a point, as opposed to data exploration. There is a qualitative difference between them. As in the physical world, miners generally know for what they are mining; they only need to find where it is. Explorers don't really know what they will find.

Data mining uses statistical algorithms to analyze data (often in a data warehouse or data mart). Such techniques include: predictive modeling (neural networks, inductive reasoning), link analysis (connecting different data records), deviation detection (record locations in segments, some are not allowed), and database segmentation (statistical clustering) (IRMC New World of the CIO Course). Data mining models include: classification (characteristics of a group), regression (using existing values to forecast), time series forecast (regression including time properties), association (items occurring together), sequence discovery (association of time-linked events), clustering (data groups). Algorithms include: traditional statistics, decision trees (e.g., classification and regression trees [CART] and chi square automatic interaction detection [CHAID]), neural networks (<http://www.calsci.com/Applications.html>), nearest neighbor method (or k-nearest neighbor technique), or rule induction. Some data mining tools are visual and even three-

dimensional or virtual reality. They may require powerful platforms to operate. Data mining is presently used for credit scoring, fraud detection, churn analysis, marketing and sales, law enforcement (drug interdiction, financial crimes, money laundering), space applications (classification of sky objects and analysis of space probe images), and health care (utilization forecasts, risk identification, and benchmarking). Various models for implementation exist, such as assess, access, analyze, act, and automate (SPSS Inc.) and define, preprocess, select, discover, interpret, integrate (IRMC Data Management Strategies and Technologies Course).

When you have eliminated the impossible, whatever remains, however improbable, must be the truth. (Sherlock Holmes [Arthur Conan Doyle].)

data model

The way data is conceptually structured (relational, object-oriented, hierarchical, etc.) (IRMC Data Management Strategies and Technologies Course).

When we are flat on our backs there is no way to look but up. (Roger W. Babson, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 100.)

data repository

A specialized database that makes data available to users across an enterprise to promote reuse and reduce redundancy. Specific examples would include the Year 2000 database and the Navy's new Data Management and Interoperability Repository (DMIR). Repositories are frequently virtual, with links to separate portions of the repository.

Small deeds done are better than great deeds planned. (Peter Marshall, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion* Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 14.)

Data Warehouse

A technological tool for storing, retrieving, and analyzing large amounts of data via data mining and exploration. A data warehouse is a special case of a database. It is updated regularly but not dynamically. Thus it represents a time slice of data. It is arranged so as to facilitate its use by a specific user set. It is often sub-replicated (specific domains extricated from it) to create data marts. Data marts are used by specific types of users; they enable faster data mining operations than could be achieved by the data warehouse itself and can be used in any manner desired by the domain users without affecting other users of the warehouse. Data warehouses are designed differently (star or snowflake versus relational or object oriented) from databases in order to optimize queries and decision support versus real-time transactions.

The EPA (<http://www.epa.gov>), Bureau of Labor Statistics, IRS, and Postal Service use data warehouses (IRMC New World of the CIO Course), and maintain their enviromap warehouse at http://www.epa.gov/enviro/index_java.html. Also see the Data Warehousing Institute's "Ten Mistakes to Avoid" at <http://www.dw-institute.com/research/display.asp?id=5000>, and especially Bill Inmon's (the "father of

the data warehouse") articles at <http://www.billinmon.com/>. (IRMC Data Management Strategies and Technologies Course.)

See *Data Warehousing at the Crossroads* (William H. Inmon, Kiva Productions, 1999).

<http://www.gmisystems.com/warehous/newslist.htm>;

<http://gates.comm.virginia.edu/dwresearch/links.html>.

What do they know of England who only England know? (George MacDonald, *Lilith*, from *Phantastes and Lilith*, Eerdmans Publishing, Grand Rapids, MI, 1964, p. 9.)

Decision Support Systems (DSS)

Information databases or other software that help users make quicker, better decisions. The primary objectives of decision support systems are to provide users with tools to make informed, independent decisions, preventing the delays previously caused by routing questions up a defined organizational hierarchy. Thus, DSS's support employee empowerment. IRMC has an interactive groupware DSS available for student use and used in certain courses. This Electronic Meeting System (EMS) provides anonymity, parallel communications, distributed participation (versus domination), fast data organization and tabulation, session recording/recall, and time for participant reflection. It would support integrated product and process development (IPPD)] (e.g., integrated product teams), business process reengineering, prioritization and evaluation, etc. The Army National Guard used it to prioritize projects and funding. The Defense Information Systems Agency's Chief Information Office staff used it to create the integrated definition for information model. National Defense University commandants and joint staff used it to select the dean of the IRMC. Many government organizations use DSSs, including: ACOM (now JFCOM), North Atlantic Treaty Organization, Defense Logistics Agency, Defense Information Systems Agency, National Defense University, U.S. Marine Corps HQ, Navy BUPERS, Patuxent River Public Works, Naval War College, Air Force Institute of Technology (AFIT), Langley Air Force Base, Federal Aviation Administration, Internal Revenue Service, U.S. Postal Service, National Security Agency, Department of Education. (IRMC Advanced Software Acquisition Management Course).

Rough Comparison of a Few Group DSS Products^a

Product	Vendor	Cost	Capability
GroupSystem http://www.ventana.com	Ventana	~\$1K per workstation	Brainstorm, list building and evaluation, group drawing, outlining, voting, survey
Meeting Room	Eden Systems	\$895 per 10 pack	Basic tools, brainstorm, organize, vote
TeamEC Ahp.net/www/ahp	Expert Choice	~\$9k	Brainstorm, hierarchies, evaluation
CM/I	Corporate Memory Systems	\$795 per 10 pack	Thinking diagrams
TCBWorks	Terry College of Business, University of Georgia	?	Basic idea collection and evaluation http://www.cs.adfa.oz.au/teaching/studinfo/da2/lectures/L21html/sld001.htm

a. Data as of 1999 (IRMC Advanced Software Acquisition Management Course).

Meetings can also be held in virtual reality space (<http://www.worlds.net> and <http://www.onlive.com>) or on video (e.g., <http://www.picturetel.com> or <http://www.cinecom.com>). See Coleman and Khanna's *Groupware: Technology and Applications* (Prentice Hall, Inc., NJ, 1995); Glenn Rifkin's "A Skeptic's Guide to Groupware" (*Forbes ASAP*, 1995, June); Bill Roberts' "Groupware Strategies" (*BYTE Magazine*, July 1996, pp. 68-78); and Amy Cortese's "Here Comes the Intranet" (*Business Week*, 1996, February 26, pp. 76-84) (IRMC Advanced Software Acquisition Management Course). See "In Praise of Hierarchy" by Elliott Jaques (*Harvard Business Review*, 1990, January-February, 90107).

We decide, as if we knew. We only know what we know, but there is plenty more of which we might know if only we could give up insisting upon what we do know. (C. G. Jung, *Letters*, Vol. 2, Bollingen Series 95, 1951-61, Gerhard Adler and Aniela Jaffe, Eds., Princeton University Press, Princeton, NJ, 1953-75, p. 591.)

Decision Superiority—see *Joint Vision 2020* <http://www.dtic.mil/jv2020>

The ability to take advantage of superior information, convert it to superior knowledge and make better decisions that are arrived at and implemented faster than an opponent can react, or in a noncombat environment, at a tempo that allows the commander to shape the situation, react to change, and accomplish his mission (*Glossary of IM/IT & KM Terms*). Decision superiority can result from superior knowledge or superior ability to make decisions. Thus, superior knowledge can enable but not ensure decision superiority. See *Joint Vision 2020* (JV 2020) for more information on decision superiority. While decision superiority is one possible result of superior knowledge (KM), it is not the only advantage thereof. Superior knowledge also enables other objectives in JV 2020 such as focused logistics.

In a talk to the graduating class at Smith College, Adlai Stevenson once told his listeners that the "self-adjusted" people who fit painlessly into the social pattern may not be the most valuable citizens. "While I am not in favor of maladjustment," he added, "I view this cultivation of neutrality, this breeding of mental neuters, this hostility to eccentricity with grave misgiving. One looks back with dismay at the possibility of Shakespeare perfectly adjusted to bourgeois life in Stratford, Wesley contentedly administering a county parish, George Washington going to London to receive a barony from George III, or Abraham Lincoln prospering in Springfield with nary a concern for the preservation of the crumbling union. What is needed," continued Mr. Stevenson, "is not just well-adjusted, well-balanced personalities, not just better groupies and conformers but more idiosyncratic, unpredictable characters; people who take open eyes and open minds out with them into the society which they will share and help to transform." (Quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 281.)

Decision Theory—see Asymmetric Dominance and Utility Theory

The study of how to make logical decisions. It is often studied under operations research, program/systems management, or financial management when addressing investments. There are more than 100 decision theory techniques and approaches, having varying accuracy and difficulty. Decision theory is included in the Defense Acquisition Workforce Improvement Act program management track (PMT302, Advanced Program Management Course). (See Brassard and Ritter, *The Memory Jogger II, A Pocket Guide of Tools for Continuous Improvement and Effective Planning*, GOAL/QPC, 1994.) The scientific method is a form of decision theory. Many methods are numerical and use money as the criterion of comparison. The baseline technique of this kind is the La Place method (by the famous mathematician). However, individual decisions (e.g., playing the stock market) are determined by participants emphasizing differing risk-taking strategies, the mini-max and maxi-min extensions of La Place were developed to address such differences. They either minimize the risk or maximize the gain. Additionally, utility theory addresses situations in which a dollar isn't a dollar—where various circumstances affect the values of the outcomes. Thus outcome utility to the decider becomes the criterion, versus monetary measures. Other decision theory techniques (e.g., the nominal group technique) are more ordinal in nature—based upon relative value or importance of possible alternatives rather than absolute (e.g., dollar) measures. The Delphi technique is another well-known decision method. The meta-decision of what decision method to use depends upon the accuracy and timeliness needed, the data or information available, and the propensities and idiosyncrasies of the decision group.

Science, after all, means the willingness to observe facts and follow them to whatever conclusions they will lead, not to try to push the facts into a desired pattern. (Menahem Mendel Schneersohn [seventh Lubavitcher Rebbe], quoted by Herbert Weiner in *9 1/2 Mystics*, Collier Books (McMillan), New York, 1971, p. 192.)

Decision contains the uncertainty of the wisdom of the choice, and calls for the capacity to tolerate uncertainty while awaiting the final outcome, and possible failure. This uncertainty, however, it must be noted, has a special quality. The use of discretion depends upon unconscious as well as conscious mental functioning—the capacity for synthesis of unconscious ideas and intuitions and bringing them into consciousness. (Elliott Jaques, *Creativity and Work*, International Universities Press Inc., Madison, CT, 1990, pp. 331–332.)

Decryption—see Encryption

The process of extracting text that has been encrypted; changing ciphertext into cleartext or plaintext. In symmetric encryption, the single key that encrypted the text must be used to decrypt or unencrypt the text. In asymmetric encryption, a person's private key is required to decrypt text encrypted with that person's public key. Similarly, a person's public key is required to decrypt text encrypted with that person's private key.

Ninety percent of the game is half mental. (Yogi Berra, *The Yogi Book*, Workman Publications, New York, 1998, p. 69.)

Defense Acquisition Executive (DAE)—see Acquisition

The Under Secretary of Defense for Acquisition, Technology, and Logistics (USD [ATL])—formerly Acquisition and Technology, A&T—is the DAE. The DAE is the top executive for defense acquisition and the Milestone Decision Authority (MDA) for the largest acquisition programs (ACAT [acquisition category] 1D). The DAE publishes the acquisition “bible” – the DoD 5000 series of documents (DoDD 5000.1, *Defense Acquisition* March 15, 1996; DoD 5000.2-R, *Mandatory Procedures for Major Defense Acquisition Programs (MDAPs) and Major Automated Information Systems (MAIS) Acquisition Programs*, March 15, 1996), now revised, (http://www.safaq.hq.af.mil/acq_pol/dod5000/final). Formerly, automated data processing or automated information system programs were governed by the Department of Defense (DoD) 8000 series, but these were combined into DoD 5000. However, the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence (ASD [C³I]) remained MDA for these acquisitions. The Assistant Secretary of Defense for Command, Control, Communications, and Intelligence also became the DoD CIO.

Without strong, aggressive, committed, and knowledgeable leadership, there will be no one to persuade the barons running functional silos within the company to subordinate the interests of their functional areas to those of the processes that cross their boundaries. (Michael Hammer and James Champy, *Reengineering the Corporation*, Harper Business, New York, 1993, p. 107.)

Defense Acquisition Workforce Improvement Act (DAWIA)

This statute established numerous competencies with the defense acquisition process. These include: program management (PM), financial management (FIN), contracting (CON), systems engineering (SYS), communications and computers (IRM), etc. Within each competency there are three levels of achievement (level 1 is entry level, level 2 is journeyman, level 3 is advanced). There are varying requirements (education, training, and experience) required to attain these levels within the competencies. Government workers may be designated members of the acquisition professional corps (APC) and required to attain specified levels of competency dependent upon their job requirements. Specific job billets are also designated as critical or noncritical billets. Certificates are issued for APC membership and for each competency level achieved. DAWIA training courses are given primarily by the Defense Acquisition University headquartered at Ft. Belvoir, VA. However, a few courses can also be taken at the National Defense

University's (NDU's) Information Resources Management College (IRMC)—e.g., Advanced Information System Acquisition Course, the IRM Capstone Course (level 3).

Truth comes as a conqueror only to those who have lost the art of receiving it as a friend. (George MacDonald, *Lilith* from *Phantastes and Lilith*, Erdman's Publishing, Grand Rapids, MI, 1964, p. 59.)

DAU Web site: <http://www.dau.mil/>

DAU publications: <http://www.dau.mil/pubs/pubsgen.htm> (*Program Manager and Acquisition Review Quarterly*)

DAWIA courses and requirements: http://www.register-now.cms.navy.mil/navstar/ns_secure/nshome.htm; <http://www.register-now.cms.navy.mil/navstar/default.htm> (This is the new site.)

DAWIA Waivers: http://www.safaq.hq.af.mil/acq_workf/waivers.html

Director Acquisition Career Management site: <http://dacm.secnave.navy.mil/>.

Defense Acquisition Workforce Personnel Demonstration Project (DAWPDP)

Special legislation (in the Fiscal Year 1996 Defense Authorization Act) gave Department of Defense (DoD) the opportunity to investigate innovative ways to manage and pay selected individuals and find better ways to manage the workforce. It was continued and revised in the Fiscal Year 1998 Defense Authorization Act. A demonstration project was created, targeting the acquisition workforce (about 25 percent of all DoD civilians) in July 1998 for 14,500 employees (out of the 95,000 authorized by Congress). These employees were converted from GS grades to three different career paths and paid in broader pay bands (3 or 4 pay bands versus 15 GS levels, depending on the career path). The paths are: business and technical management professionals (BTMP), technical management support (TMS), and administrative support (AS).

Pay Band Level Equivalents (in Roman Numerals) to GS Grades

Band/Grade:	GS 1-4	GS 5-7	GS 8	GS 9-10	GS 11	GS 12-13	GS 14-15
BTMP	I	II	II	II	II	III	IV
TM	I	II	II	III	III	IV	—
AS	I	II	III	III	—	—	—

Pay is tied to job performance. Employees within a band can proceed within the band, attaining the equivalent to a promotion without being officially promoted. However, persons leaving the project for GS positions are awarded a GS equivalent grade based upon their present salary. Annually, employees are rated by overall contribution score (OCS) of 0 to 100 points. Employees with high OCSs receive raises and bonuses. Supervisors must justify their employees' scores to other supervisors (IRMC New World of the CIO Course).

It is by logic we prove, but by intuition that we discover. To know how to criticize is good, but to know how to create is better. (Henri Poincaré, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 251.)

Defense in Depth (DiD)

DiD is a military strategy to employ several simultaneous layers of defense so that an attacker must successfully compromise each and every layer in order to compromise the system being protected. The concept is applied to military operations in general (see *JV 2020*) and computer security (in the IT arena) in particular. Usually, each layer uses different technologies, vendors, and procedures to strengthen overall system security. Typical defenses include: firewalls, intrusion detection devices (IDSs), virus checkers, and virtual private networks (VPNs).

To be prepared for war is one of the most effectual means of preserving peace. (George Washington, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 174.)

Defense Information Infrastructure (DII)

DII refers to the entire collection of communications networks, computers, software, database, applications, and related information processing capabilities of the Department of Defense (DoD). It is considered a subset of the federal information infrastructure (FII) that is part of the national information infrastructure (NII) that is part of the global information infrastructure (GII). See global information grid (GIG). It implies, but does not control or guarantee, interoperability. The best-known infrastructure is, of course, the Internet or Web. The DII is considered to consist of: people, processes, and tools (PPT). DII is often associated with the common operating environment that actually implements standardization into IT development. The DoN has taken the initiative to implement a department-wide (covering two Services) standard intranet, including all infrastructure components via a seat management strategy/contract, Navy/Marine Corps Intranet.

See *DII Master Plan*, version 7.0, 3/13/98 <http://www.disa.mil/diimp/diimp-t.html> (IRMC Assuring the Information Infrastructure Course). Other definitions/characteristics include: first, the network standards and protocols that facilitate interconnection and interpretation among networks and systems and that provide security for the information carried and second, the people and assets which provide the integration, design, management, and operation of the DII, develop the applications and services, construct the facilities, and train others in the DII capabilities and use (IRMC Advanced Software Acquisition Management Course).

... barriers operate against the generation and sharing of the explicit as well as the tacit dimensions of knowledge. Some barriers, however, specifically inhibit the growth and transfer of tacit dimensions. First, working groups often exhibit a strong preference for a particular type of communication—most often (at least in most business situations) communication that is logical, rational, and based on “hard” data. As numerous studies of thinking styles have shown, individuals have strong thinking style preferences—for particular types of information—“hard-wired” into their brains and reinforced over years of practices and self-selection into certain careers.⁷ Even if an individual could make some of the tacit dimensions of his or her knowledge explicit in the form of a physical demonstration or a drawing, such information would rarely be given a hearing because such evidence is not regarded in most business settings as relevant or useful unless backed up with analysis. (See Dorothy Leonard and Sylvia Sensiper, “The Role of Tacit Knowledge in Group Innovation,” *California Management Review*, Berkeley, CA, Spring 1998, Vol. 40, Issue 3, pp. 112–132.)

Defense Information Systems Agency (DISA), chartered by DoDD 5105.19 (June 25, 1991)

DISA is a Department of Defense (DoD) component responsible for planning, developing, and supporting command, control, communications and intelligence (C³I). It is under the direction, authority, guidance, and control of the Assistant Secretary of Defense (ASD) for C³I (the DoD CIO). DISA serves as the central manager for major portions of the defense information infrastructure including the defense information systems network (DISN). DISA provides the valuable (and fun) CyberProtect CD. <http://www.disa.mil/>.

When you come to a fork in the road, take it. (Yogi Berra, *The Yogi Book*, Workman Publications, New York, 1998, p. 48.)

Defense Information Technology Security Certification and Accreditation Process (DITSCAP)

In response to the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) memo of August 19, 1992, to develop a standardized certification and accreditation (C&A) process (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course), DoDD 5200.40 (December 30, 1997) established a standard, life-cycle process (DITSCAP) to verify, validate, implement, and maintain the security of the DII. It focuses on confidentiality, integrity, availability, nonrepudiation, and authentication (CIANA) and acceptable risk level or value (IRMC Assuring the Information Infrastructure Course). There is also a non-DoD version, NSTISSI 1000 (April 2000) called NIACAP. DITSCAP is infrastructure-centric, describes generic process activities and tasks, and provides a process for uniform C&A, including four levels of certification analysis. It reduces documentation requirements significantly, requiring a system security authorization agreement (SSAA) versus a large number of documents previously required by the Defense Information Systems Agency. It is a success-oriented C&A process with four phases: definition (mission architecture/environment, security requirements, SSAA), verification (security features, implemented documentation), validation (of integrated system), and post-accreditation (monitor compliance and change management). The process takes typically 18 months and costs \$3,000 to \$400,000. (See *DITSCAP Application Manual 8510.1-M*, July 2000.) The Designated Approval Authority (DAA) accredits the system under DITSCAP (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

DITSCAP Phases and Tasks, per the Defense Information Systems Agency^a

Phase #	Phase 1	Phase 2	Phase 3	Phase 4
Phase:	Definition	Verification	Validation	Post accreditation
Purpose	Gather IT information to plan the C&A tasks	Verify system compliance with SSAA requirements to obtain a fully integrated system for certification testing and accreditation	Validates the fully integrated system compliance with SSAA requirements to obtain full approval to operate the system	After accreditation, and until system removed from service or changed or a periodic compliance validation is required
Task 1	Prepare mission description and system identification	System architecture analysis	Security Test and Evaluation (T&E)	SSAA maintenance
Task 2	Register the system	Software design analysis	Penetration testing	Physical, personnel, and management control review
Task 3	Prepare the environment and threat description	Network connection rule compliance analysis	Verify TEMPEST compliance if applicable	Contingency plan
Task 4	Prepare the system architecture description	Integrity analysis of integrated products (COTS, GOTS, NDI)	Verify appropriate use of COMSEC if applicable	Verify TEMPEST compliance if applicable
Task 5	Determine the ITSEC system class	Life-cycle management analysis	System management analysis	Verify appropriate use of COMSEC material and equipment if applicable
Task 6	Determine the system security requirements	Vulnerability assessment	Site accreditation survey	Change management
Task 7	Identify the C&A organizations and resources required	None	Contingency plan evaluation	Conduct risk management analysis
Task 8	None	None	Risk management review	None

a. IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course.

You can't win through negotiations what you can't win on the battlefield. (Henry Kissinger, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 502.)

Defense Reform Initiative (DRI) of 1997—see A-76

Secretary of Defense William Cohen urged the use of acquisition reform initiatives to ease the acquisition process (e.g., federal supply schedules). The DRI also required the

Department of Defense (DoD) to compile lists of commercial activities done in-house that could be considered for outsourcing under Office of Management and Budget Circular A-76 by 1999 (IRMC New World of the CIO Course). The DRI was based upon a Defense Science Board study of how to reform DoD. Initially it paralleled the study closely, but full implementation was not achieved. Much of the reorganization of the department was either not carried out or not completed. Some recommendations required legislative action that was not forthcoming. For example, the Defense Science Board recommended that Assistant Secretary of Defense for Command, Control, Communications, and Intelligence (ASD [C³I]) report to the Under Secretary of Defense (Acquisition and Technology) in order to establish an acquisition chain of command and fully apply acquisition lessons learned to IT. However, as the DoD CIO, ASD (C³I) was required by law to report directly to the Secretary of Defense. Further, the dictated reduction in Pentagon staffing was primarily achieved by paper transfers of personnel to DoD components.

Gartner Group stated (February 27, 1997) that "70 percent of the government organizations that consider outsourcing will be unable to close a deal because of inadequate handling of human resource issues (.75 probability)." Total productive hours set at 1,776 hours/FTE (full time equivalent = average worker). Total personnel costs = [total productive hours/1,776 (FTEs)] x [basic pay] x [fringe benefits (32.45 percent of basic pay; where 23.7 percent = retirement; 7.05 percent = life/health insurance; 1.7 percent = miscellaneous benefits)]. The 1,776 hours is reached by deducting 221 hours/year for sick/annual leave, training, etc., from 1,997 hours. In-house costs = personnel costs (above) + overhead/indirect costs (12 percent) + materials and supply costs + depreciation and cost of capital and rent + operation, maintenance, and repair + utilities, travel, and insurance + MEO subcontract costs + other costs (IRMC Advanced Software Acquisition Management Course).

Dealing with the Bureaucracy is like trying to pick up Mt. Everest. (Bob Horrell, SEA907d, January 27, 1986.)

Defense-wide IA Program (DIAP)—see Critical Asset Assurance Program and Critical Infrastructure Protection (CIP)

Assists in identifying critical assets in the defense information infrastructure and C³I sectors; determines required level of information assurance (IA) for critical information assets in all defense information sectors; provides business case for IA investments, especially shared risk remediation investments; provides engineering standards for IA designs, practices, and countermeasures (The DoD CIP Plan [FOUO], November 18, 1998, p. 23). See Defense Appropriations Act P. L. 106-65, (October 5, 1999, subtitle E—*Information Security*, Section 1043, paragraph 2224, Defense Information Assurance Program). DIAP focuses on two teams: Functional Evaluation and Integration Team (FEIT) and Program Development and Integration Team (PDIT). Contacts include: COL Gene Tyler, 703-602-9988, Gene.Tyler@osd.mil, and Robert Gorrie Robert.gorrie@osd.mil, (703) 602-5042, Eustace King eustace.king@osd.mil, 703-602-9969, George Bieber, 703-602-9980 george.bieber@osd.mil, systems administration and training; fax =703-602-7209. DIAP was based on a 1997 ASD (C³I) study and was signed by Deputy Secretary of

Defense Hamre on January 30, 1998. See DoDD 5200.28, March 21, 1988, *Security Requirements for Automated Information Systems* (IRMC Assuring the Information Infrastructure Course). DIAP FEIT addresses readiness assessment, human resources, policy integration, security management, operational environment, architectural standards and transformational strategies, acquisition support and product development, research and technology, critical infrastructure integration. DIAP PDIT addresses oversight, coordination, and integration of DoD's IA resource programs, IA initiatives, information assurance vulnerability alerts, computer network defense working group, IA training, public key infrastructure, etc.

DeMilitarized Zone (DMZ)

In IT, a DMZ is a network segment between the external firewall (connecting to the Internet, et al.) and an internal firewall connected to the organization's networks. The DMZ may have its own level of security and security devices, software, etc., that differ from other network segments (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

15. (Shea's Law) The ability to improve a design occurs primarily at the interfaces. This is also the prime location for screwing it up. (David Akin, professor, University of Maryland, "Akin's Laws of Spacecraft Design" [received via Internet e-mail] and confirmed by Dr. Akin dakin@umd.edu or DAKIN@SSL.UMD.EDU. See http://spacecraft.ssl.umd.edu/academics/akins_laws.html.)

Denial Of Service (DoS) Attacks—cf. Distributed Denial of Service

A malicious attack against an information system to prevent that system from functioning. There are several techniques and different kinds of perpetrators. Attackers can use such techniques as mail bombs, "syn flooding," "ping of death," or "teardrop" (IRMC Managing Networked Security in a Networked Environment Course).

I was shipwrecked before I got aboard. (Seneca, 8 B.C.–65 A.D., 87,1, *Epistles* from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 129.)

Dense Wavelength Division Multiplexing (DWDM)

A technology that combines data from different sources onto an optical fiber with each signal carried on its own separate light wavelength. Using DWDM, up to 80 (and theoretically more) separate wavelengths or channels of data can be multiplexed into a light stream transmitted on a single optical fiber. In a system with each channel carrying 2.5 Gbps (billion bits per second), up to 200 Gbps can be delivered by the optical fiber. DWDM is also sometimes called wave division multiplexing (from *Glossary of IM/IT & KM Terms*).

He can see stars so distant their light travels for a hundred lifetimes before it kisses the eyes of the man. (Orson Scott Card, *Children of the Mind*, Tom Doherty Books, New York, 1996, p. 173.)

Departments—see Components and Services

Major divisions within the federal executive branch of the U.S. government. Within the Department of Defense, this refers to the three departments that include the three Services: DOA (Army), DOAF (Air Force), DON (Marine Corps and Navy).

The fragmented process found in traditional companies lead to narrowly specialized jobs and organizations based on functional departments. Integrated processes give rise to multidimensional jobs that are best organized into process teams. (Michael Hammer and James Champy, *Reengineering the Corporation*, Harper Business, New York, 1993, p. 81.)

Derived Importance

A method used to identify the drivers of satisfaction. Statistical correlation analyses are used to calculate derived importance.

An old man was living with his son at an abandoned fort on the top of a hill, and one day he lost a horse. The neighbors came to express their sympathy for this misfortune, and the old man asked, "How do you know this is bad luck?" A few days afterwards, his horse returned with a number of wild horses, and his neighbors came again to congratulate him on this stroke of fortune, and the old man replied, "How do you know this is good luck?" With so many horses around, his son began to take to riding, and one day he broke his leg. Again the neighbors came around to express their sympathy, and the old man replied, "How do you know this is bad luck?" The next year there was a war, and because the old man's son was crippled, he did not have to go to the front. (George Kao, *Chinese Wit & Humor*, Coward-McCann, 1946, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 224.)

Digicash

A method of electronic commerce in which the customer deposits funds in a bank; decides to withdraw digital cash; software converts that request into randomly numbered tokens; the bank digitally signs the tokens with its private key, sends these to the customer, and debits customer's account. The customer chooses a merchant and the item to buy, orders it using a digital cash option, and his or her computer sends the approximate number of tokens to the merchant. The merchant re-sends the tokens to the online bank; the bank validates the tokens and credits the merchant's account (IRMC Managing Networked Security in a Networked Environment Course).

Law of the supermarket: The other line moves faster. (*3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 235.)

Digital Cash

Funds that are recorded and spent electronically. Smart cards can be used to record or deposit digital cash, which can be spent at merchants that have devices designed to accept this type of payment. Secret sharing can be used to maintain anonymity in digital cash payments while precluding double spending, and bit commitment to trace cheaters. Zero-knowledge proofs are used to authenticate digital cash cards without revealing their serial numbers (IRMC Managing Networked Security in a Networked Environment Course).

An unemployed man goes to apply for a job with Microsoft Corp. as a janitor. The manager there arranges for him to take an aptitude test (Section: Floors, sweeping and

cleaning). After the test, the manager says, "You will be employed at minimum wage, \$5.15 an hour. Let me have your e-mail address, so that I can send you a form to complete and tell you where to report for work on your first day." Taken aback, the man protests that he has neither a computer nor an e-mail address. To this the Microsoft Corp. manager replies, "Well, then, that means that you virtually don't exist and can therefore hardly expect to be employed." Stunned, the man leaves. Not knowing where to turn and having only \$10 in his wallet, he decides to buy a 25-pound flat of tomatoes at the supermarket. Within less than 2 hours, he sells all the tomatoes individually at 100 percent profit. Repeating the process several times more that day, he ends up with almost \$100 before going to sleep that night. And thus it dawns on him that he could quite easily make a living selling tomatoes. Getting up early every day and going to bed late, he multiplies his profits quickly. After a short time he acquires a cart to transport several dozen boxes of tomatoes, only to have to trade it in again so that he can buy a pick-up truck to support his expanding business. By the end of the second year, he is the owner of a fleet of pick-up trucks and manages a staff of a hundred formerly unemployed people, all selling tomatoes. Planning for the future of his wife and children, he decides to buy some life insurance. Consulting with an insurance adviser, he picks an insurance plan to fit his new circumstances. At the end of the telephone conversation, the adviser asks him for his e-mail address in order to send the final documents electronically. When the man replies that he has no e-mail, the adviser is stunned, "What, you don't have e-mail? How on earth have you managed to amass such wealth without the Internet, e-mail and e-commerce? Just imagine where you would be now, if you had been connected to the Internet from the very start!" After a moment of thought, the tomato millionaire replied, "Why, of course! I would be a floor cleaner at Microsoft!" Morals of this story:

1. The Internet, e-mail and e-commerce do not need to rule your life.
2. If you don't have e-mail, but work hard, you can still become a millionaire.
3. Seeing that you got this story via e-mail, you're probably closer to becoming a janitor than you are to becoming a millionaire.
4. If you do have a computer and e-mail, you have already been taken to the cleaners by Microsoft.

[Received via Internet e-mail; this is an Urban Legend; see <http://www.snopes2.com/> or Brunvand, Jan Harold. *The Baby Train*. New York: W. W. Norton, 1993, pp. 155-156 or Cobb, Irvin S. *A Laugh a Day Keeps the Doctor Away*. New York: Garden City Publishing, 1923.]

Digital Certificate

An electronic credential used to identify individuals when doing business or other transactions electronically. It contains an individual's name, public key, a serial number, expiration dates, and additional data describing the individual. It also contains a digital signature(s) certifying its authenticity. Digital certificates are a key element in public key infrastructure encryption. It should be controlled via key management infrastructure-utilizing registration and certification authorities. Standards include "pretty good privacy" (PGP) and X.509, however, certificate compatibility is a major issue. See middleware and PKEnable. http://searchsecurity.techtarget.com/sDefinition/0,,sid14_gci211947,00.html. Also, certificates may be hackable—see *Microsoft Security Bulletin MS01-017 "Erroneous VeriSign-Issued Digital Certificates Pose Spoofing Hazard"* (originally posted: March 22, 2001, Updated: March 28, 2001), <http://www.microsoft.com/technet/treeview/default.asp?url=/TechNet/security/bulletin/ms01-017.asp>, that addresses an instance in which a hacker conned VeriSign into issuing a bogus certificate by posing as a valid employee of a client firm.

The Public Key Infrastructure Steering Committee helped create the Federal Bridge Certificate Authority <http://csrc.nist.gov/pki/fbca/welcome.html>, that enables departments and agencies to issue digital certificates. Under contract with the government, Digital Signature Trust and AT&T also worked with industry partners, such as VeriSign, to develop Access Certificates for Electronic Services <http://hydra.gsa.gov/aces/index.htm>, the foundation for current government-wide PKI solutions.

The Internet is like a herd of performing elephants with diarrhea—massive, difficult to redirect, awe-inspiring, entertaining and a source of mind boggling amounts of excrement when you least expect it. (Gene Spofford, quoted by Des MacHale in *Wit*, Roberts Rinehart, Boulder, CO, 1998, p. 204).

Digital Millennium Copyright Act (DMCA) of 1998

Prohibits circumvention of technical measures controlling access to protected works (effective in 2000) as well as manufacture, importation, offer to the public, provision, or trafficking in any technology, product, service, device, component, or part thereof primarily designed or produced to circumvent a technical measure, or knowingly marketing devices to circumvent technical measures. Exceptions include lawfully authorized law enforcement, intelligence, and other governmental activities; for reverse engineering to achieve interoperability with other computer programs; for good faith conduct of encryption research; and to disable features which collect or disseminate identifying information reflecting the online activities of a natural person (IRMC Advanced Information System Acquisition Course). Primarily affects code-crackers and software pirates; limits liability of service providers such as Internet service providers and colleges (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

If you steal from one author, it's plagiarism. If you steal from many, it's research. (Wilson Mizner, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 180.)

Digital Signature

An electronic, rather than a written, signature that can be used by someone to authenticate the identity of the sender of a message or of the signer of a document. It can also be used to ensure that the original content of the message or document that has been conveyed is unchanged. Additional benefits to the use of a digital signature are that it is easily transportable, cannot be easily repudiated, cannot be imitated by someone else, and can be automatically time-stamped (*Glossary of IM/IT & KM Terms*). Digital signatures are key elements in public key infrastructure encryption. They should not be confused with electronic signatures that are digital representations of a person's physical signature. To preserve privacy, blinded digital signatures prevent banks from tracking digital bill serial numbers. The government of Canada, Communications Security Establishment, issued, *What is a Digital Signature?* <http://www.cse-cst.gc.ca/en/services/pki/ds.html> and IDG News Service published Margaret Johnston's *Digital Signatures Take Effect in United States*

on October 2, 2000 (IRMC Managing Networked Security in a Networked Environment Course).

A verbal agreement isn't worth the paper it's written on. (Samuel Goldwyn, quoted by Noah ben Shea in *Great Jewish Quotes*, Ballantine, New York, 1993.)

Digital Subscriber Line (DSL)

A technology for bringing high-bandwidth information to homes and small businesses over ordinary copper telephone lines. Assuming your home or small business is close enough to a telephone company central office that offers DSL service, you may be able to receive data at rates up to 6.1 megabits (millions of bits) per second (of a theoretical 8.448 megabits per second), enabling continuous transmission of motion video, audio, and even 3-D effects. More typically, individual connections will provide from 1.544 mbps to 512 kbps downstream and about 128 kbps upstream. A DSL line can carry both data and voice signals, and the data part of the line is continuously connected (*Glossary of IM/IT & KM Terms*). Telephone line connection for personal use that delivers 640 kbps bandwidth to consumers. This enables VTC for personal use (IRMC New World of the CIO Course). Since DSL utilizes a sharing technique, there are security risks associated with its use. DSL users should provide their own personal firewalls and other computer security software to protect their systems from attack or use and control by outside parties.

We're lost, but we're making good time. (Yogi Berra. *The Yogi Book*, Workman Publications, New York, 1998, p. 51.)

Digital Versatile Disk (DVD)—see Optical Storage Devices

A digital storage device/medium holding 4.7 Gbs/layer, equivalent to 7 CD-ROMs. DVDs are 8–10 times as fast as CD-ROMs, yet they are backwards compatible (i.e., DVD devices can read CD-ROMs). DVDs are frequently used for motion pictures (movies). A DVD can hold a movie with up to eight languages; support letterbox aspect-ratio (16:9); lasts up to 2 hours and 13 minutes; and costs about \$20/movie. Fidelity is excellent. DVD-ROMs are becoming more prevalent—especially as applications grow in size (e.g., Microsoft's EnCarta is on two CD-ROMs) (IRMC New World of the CIO Course).

All life is only a set of pictures in the brain, among which there is no difference betwixt those born of real things and those born of inward dreamings, and no cause to value the one above the other. (H. P. Lovecraft, "The Silver Key," *The Dream Quest of Unknown Kadath*, p. 151.)

Direct Sequence Spread Spectrum (DSSS) or (DS-CDMA)

DSSS is one of two main methods of implementing spread spectrum processing (the other is frequency-hopping spread spectrum, FHSS) to reduce interference in radio frequency (RF) signals (and make them more difficult to intercept). In spread spectrum, the frequency of the signal is split into portions (1 MHz channels) that are spread through the allowable bandwidth (for wireless IT, this is an 83.5 MHz band). DSSS is also known as direct sequence code division multiple access (DS-CDMA). With DSSS, a data signal is combined with a chipping code that divides the data over the band according to a

spreading ratio. The redundant chipping code helps with resistance to interference and with data recovery if bits are damaged during transmission. Compared with FHSS, DSSS has greater range, higher data rates for individual users, tolerance of narrow band interference, and better voice quality. However, it is also has higher power, less secure against eavesdropping, limited number of channels, lower data rates for multiple users, and costs more than FHSS (IRMC Managing Networked Security in a Networked Environment Course).

It's déjà vu all over again! (Yogi Berra. *The Yogi Book*, Workman Publications, New York, 1998, p. 30.)

Disaster Recovery—see Continuity Of Operations Plan (COOP)

This is the process of reestablishing operations after a disaster occurs. Its success is highly dependent upon proper advance planning, such as is performed when creating a continuity of operations plan (COOP). It is part of the discipline of assuring the information infrastructure (Assuring the Information Infrastructure Course) when applied to IT. Disasters can be natural (e.g., an earthquake) or artificial (bomb or attack, electronic or physical). The Federal Emergency Management Agency (FEMA) was created to address disasters. FEMA tracks natural disasters on its site:

<http://www.esri.com/hazards/>. See Lucie Juneau's "A River Runs Through IT – Disaster Recovery" *CIO Magazine* 4/1/98 http://www.cio.com/archive/040198_disaster.html (IRMC Assuring the Information Infrastructure Course).

Disaster Recovery Costs/Times (Very Approximate Extrapolation)

Techniques→ Costs↓	Standard Recovery	Electronic Vaulting	Electronic Journaling	Shadowing	Mirroring	Hot Standby
Descriptions		Database, file, and object backup	Log/journal transfer, continuous or periodic	Database, file, and object replication	Database, file, and object replication	Assumes mirroring or shadowing plus a complete application environment
Net \$		\$	\$	\$-\$\$+	\$\$+	\$\$\$+
Tape \$		\$	\$			
Host \$			\$	\$\$+	\$\$\$	\$\$\$+
Disk \$			\$	\$\$\$\$+	\$\$\$\$+	\$\$\$\$+
Application \$					\$	\$+
Recovery Time (very approximate)	60 hours	24 hours	15 hours	8 hours	6 hours	Minutes

Alternative recovery solutions include cold site, alternate internal site, consortium, commercial hot site, and dedicated hot site in order of cost, effectiveness, and access (IRMC Assuring the Information Infrastructure Course). Also, see Components of a Successful Disaster Recovery Plan at http://disaster-resource.com/articles/components_success_wrobel.shtml which include the eight R's: reason for planning,

recognition of disaster, reaction to recognition, recovery procedures, restoration of site, return to normal, rest and relax, re-evaluate and re-document as well as appendices with call lists, forms, hardware and software lists, network diagrams, contractual agreements, duties and responsibilities, etc. (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

If all the rain that is helpful for the production of any element came at once, would it be better? If all the sunshine came at once, would it be better? If all the joy, all the sadness in the life experience of an individual were poured out at once, would it be better? (Edgar Cayce, *Healing: Practitioners and Mechanical Aids*, Circulating File, pp. 36-7 2153-6, November 12, 1940.)

Discretionary Access Control (DAC)

Means of restricting access to objects based on the identity and need-to-know of users and groups to which the object belongs. Controls are discretionary in the sense that a subject with a certain access permission is capable of passing that permission (directly or indirectly) to any other subject.

We don't need you. You haven't got through college yet. (Hewlett-Packard executive, responding to Apple Computer founders Steve Jobs' and Steve Wozniak's attempts to interest the company in the "personal computer" they had designed, 1976, quoted by Christopher Cerf and Victor Navasky in *The Experts Speak*, Villard, NY, 1984, p. 231).

Distributed Database

A database that consists of two or more data files located at different sites. Because the database is distributed (or virtual), it can be created from preexisting databases using middleware and avoiding expensive processing and rewrite. It can also avoid the risk of single-point failures.

At best, however, databases only complement the personal networks of those seeking answers to problems. No matter how robust the search functionality or how customized the database, a person's network of human relationships often determines which knowledge they access. People usually take advantage of databases only when colleagues direct them to a specific point in the database. For example, it is common for people to ask other people for information and to be directed to a specific point in a database for lessons or tools. Alternatively, people might point out work products, such as legal documents developed for other cases or sales presentation materials that could be reused with some modification in the current situation. Rather than engaging in an extensive search through an organization's repository of knowledge, employees turn first to friends and peers to learn where to find relevant knowledge. (Rob Cross and Lloyd Baird, "Technology is Not Enough: Improving Performance by Building Organizational Memory," *Sloan Management Review*, 2000, Vol. 41, No. 3, Spring, MIT reprint No. 4135, Cambridge, MA, p. 71.)

Distributed Denial Of Service (DDOS) attacks—see Denial of Service Attacks

A malicious attack on a system or network orchestrated from a number of different attack sites simultaneously to shut down the system by overloading its capacity. A number of popular commercial sites have been shut down temporarily due to DDOS attacks. Internet service providers can protect systems against such attacks.

The interlocking chain-mail logic of the underlying assumption ... a vision whose very articulation will put in peril the stately grandeur of the status quo. (Stephen Denning, *The Springboard*, Butterworth-Heinemann, Boston, 2001, p. 12.)

Distributed Learning or Distance Learning—see e-Learning

Structured learning that takes place without requiring the physical presence of an instructor. Distributed learning may use multimedia such as: audio/videotapes, CD-ROMs, audio/video teletraining, correspondence courses, interactive television, and video conferencing (*Glossary of IM/IT & KM Terms*).

A professor who has taught for many years was counseling a young teacher. "You will discover," he said, "that in nearly every class there is a youngster eager to argue. Your first impulse will be to silence him. I advise you to think carefully before doing so. He probably is the only one listening." (Jacob Braude, *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 382.)

Distributed Processing

A technique using a multiplicity of separate computers in parallel to multiply processing power. Supercomputing power has, for instance, been achieved by ganging many personal computers together to solve a problem. The National Science Foundation has a program wherein participants (e.g., universities) voluntarily allow access to their large computer systems so that a virtual super supercomputer can be created via distributed processing. This computer is more powerful than any single computer created thus far.

A conference is a gathering of important people who singly can do nothing but together can decide that nothing can be done. (Fred Allen, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 55.)

Document Management

The storage, retrieval, tracking, and administration of documents within an organization. Originally, it constituted manual file cabinets to store paper-based documents, alphabetized based on the document's contents. Since the widespread use of computer technologies, document management now also applies to electronic documents and paper-based documents that have been converted to electronic form. These electronic documents exist in a variety of formats, including word-processing files, spreadsheets, graphics, video, audio, bit-mapped images, and compound documents incorporating multiple formats. IT document management tools are used to access electronic documents. Document management gives users the ability to retrieve and manage information in an efficient manner.

Our words fly like arrows, as though we knew what was right and wrong. We cling to our own point of view as though everything depended on it. And yet our opinions have no permanence: like autumn and winter, they gradually pass away ... Joy and anger, sorrow and happiness, hope and fear, indecision and strength, humility and willfulness, enthusiasm and insolence ... continually appear before us day and night. No one knows where they come. Don't worry about it! Let them be! How can we understand it all in one

day? (Chuang Tsu, *Inner Chapters*, trans. Gia-fu Feng and Jane English, Vintage Books (Random House), New York, 1974, p. 22.)

Domain

A sphere of influence or activity; a set of admissible elements or entries (range and domain of a variable). Domains are easily envisioned in terms of Venn diagrams. They can also be described logically via set theory and Boolean algebra. A domain has a homogeneous rationale or rule for what is included in the domain and what is not included. The general approach usually is one of either clustering or clumping. High-level domains tend to be intuitively obvious. KM, IT, systems engineering, etc., all can be considered domains. In the Naval Facilities Engineering Command's (NAVFAC) engineering network, the sub-domains of building facilities have been specified as 31 technical disciplines. Each of these domains has a leader and a supporting community of practice. Domains can be considered components of an overarching taxonomy.

However, "the effect of categorizing problems by disciplines is that they then tend to be attacked only by people in that discipline" (Russell Ackoff—see systems management) (IRMC Leadership for the 21st Century Course). NAVFAC approached this vulnerability by establishing a cross-disciplinary community consisting of the 31 technical discipline leaders (TDLs) to cross-pollinate across the entire enterprise.

The initial section of a URL. See <http://www.10pht.com/> for a site selling domain names.

Expertise is knowing where to look it up. Seventy percent of the literature in your field is garbage and expertise is knowing which 70 percent. (Claudia Lipschultz, personal communication, February 24, 1999, Washington, DC.)

Domain Name Server (DNS)

The DNS is the entity that directs Web browsers to specific sites (via uniform resource locators, or URLs)—Macromedia (<http://www.macromedia.com>), for example. Unfortunately, hackers sometimes attack the DNS in order to route users to their own bogus/imposter sites which spoof the user's intended target site.

He who laughs, lasts. (Leo Rosten. *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 271.)

dot com, dot-com, or .com

"Com" is the ending or extension on e-mail and World Wide Web addresses for commercial enterprises; dot coms, therefore, are commercial activities that are Internet active. Their financial fortunes at first were highly evaluated resulting in very large price/earnings ratios, but more recently they have fallen dramatically.

The wayside of business is full of brilliant men who started out with a spurt and lacked the stamina to finish. Their places were taken by patient and unshowy plodders who never knew when to quit. (Jacob Braude, *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 271.)

Downstream Liability

If a hacker uses your computer in an attack and you didn't do adequate security, you are legally liable (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

People who fight fire with fire usually end up with ashes. (Abigail Van Buren, quoted by Bill Kane in *Gold Nuggets*, [manuscript], Alexandria, VA, 1994.)

Drill Down—see Crawlers, Data Mining, Data Warehouse, Drill Up, and Online Analytical Processing

Narrowing one's search to locate a lower level of abstraction (i.e., more detailed or specific) result. Most search engines allow the user to narrow their search. Based on the parameters set by the knowledge administrator or common search delimiters such as Boolean search coordinates, a users can narrow their topic to get more relevant results. Some search engines and portal technologies use knowledge hierarchical topic mapping to produce the weighted results as well as more manageable number of knowledge object finds (USA). Drilling down is also used in searching through databases and data warehouses using such techniques as data mining and online analytical processing. Drilling up is the opposite of drilling down.

I never let my schooling interfere with my education. (Mark Twain, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 211.)

Drill Up—see Drill Down

Widening one's search to locate a higher level of abstraction (less detailed or specific and more general) results. Most search engines allow users to expand their search. Based on the parameters set by the knowledge administrator or common search tools such dates, suggested terminology, etc., a user can expand the topic to get more relevant results. Some search engines and portal technologies use knowledge hierarchical topic and discovery mapping to produce the more relational knowledge object searches (USA). Drilling up is also used in searching through databases and data warehouses using such techniques as data mining and online analytical processing. Drilling up is the opposite of drilling down.

Forrest Gump died and went to Heaven where he was met at the Pearly Gate by St. Peter himself. The gates were closed, so Forrest approached the gatekeeper, St. Peter, who greeted Forrest, saying, "Well, Forrest, it's certainly good to see you. We have heard so many good things about you. However, there is an entrance quiz for everyone. The tests are short, but you need to pass before you can get into Heaven." Forrest responded, "It sure is good to be here, St. Peter. I have been looking forward to this, but nobody ever told me about any entrance exam. Sure hope the test isn't too hard. Life was a big enough test as it was." St. Peter explained, "I know, Forrest, but the test has only three questions: (1) What days of the week begin with the letter 't'? (2) How many seconds are there in a year? (3) What is God's first name?" Forrest went away to think the questions over and returned the next day to St. Peter to try to answer the exam questions. St. Peter waved him up and asked, "Now that you have had a chance to think the questions over, tell me your answers." Forrest responded, "Well, to the first one, how many days of the week begin with the letter 't'? Shucks, that one's easy. That'd be today and tomorrow." The Saint's eyes opened wide

as he exclaimed, "Forrest! That's not what I was thinking. But you do have a point, and I guess I didn't specify, so I will give you credit for that answer. How about the next one: 'How many seconds in a year?'" "Now that one's harder" said Forrest, "but I thought and thought about that and I guess the only answer can be twelve." Astounded, St. Peter exclaimed, "Twelve! Twelve! Forrest, how in Heaven's name could you come up with twelve seconds in a year?" Forest answered, "Aw, come on, St. Peter, there's gotta be twelve. January second, February second, March second ..." "Hold it," interrupted St. Peter. "I see where you're going with it. I guess I see your point, though that wasn't quite what I had in mind, but I'll give you credit for that one too. Let's go on with the next and final question. Can you tell me God's first name?" Forrest replied, "Andy." When St. Peter asked Forrest how in the world he came up with the name Andy, Forrest replied, "You know, St. Peter, that song we sing in church: 'Andy walks with me; Andy talks with me.'" The lesson: There is always another point of view, and just because another person doesn't see things the same way or understand the same way that you do, does not necessarily mean that the other person's viewpoint is wrong. [Internet e-mail story.]

E

Early Adopters

In the change management life cycle, early adopters are the first, small group to try out a new concept, product, etc. This paradigm has been addressed in the product life cycle studied under the marketing discipline. This group is outside the majority, who are within one standard deviation of the mean (68 percent of the distribution). Since the normal distribution is symmetrical, the remaining 32 percent is equally distributed on the two sides of the mean, each being 16 percent. This approximates the Pareto Principle's 80:20 rule. Price Pritchett describes the various sub-groups during change management in several books including *High Velocity Culture Change*. Early adopters are often referred to during major technological transitions such as the implementation of the public key infrastructure or Navy/Marine Corps Intranet.

Do not follow where the path leads. Rather, go where there is no path and leave a trail.
(Poster)

Earned Value Management (EVM) System (EVMS)

A technique for managing contractor or developer performance on a project against a baseline. EVM was formerly referred to as cost/schedule control systems criteria (C/SCSC). Work packages have estimated costs associated with them in accordance with a predefined work breakdown structure. As time goes on the value of work actually performed (budgeted cost of work performed, or BCWP) is compared with the funds actually spent (actual cost of work performed, or ACWP) to calculate any overrun or underrun. A cost performance index (CPI) is calculated as $ACWP/BCWP$. This is the slope of the curve (usually plotted pictorially for program reviews and reports). Similarly, schedule variances and the schedule performance index (SPI) are calculated from the same BCWP and from the estimated cost according to the baseline schedule (budgeted cost of work scheduled) taken from the project plan curve (created at the beginning of the project or as updated via a baseline change thereafter). The schedule variance is the $BCWS-BCWP$ and $SPI = BCWS/BCWP$. The original budget total is called the BAC (budget at completion). An overrun would generate a new estimate at completion (EAC) that can be calculated from the indices described above. The difference ($EAC-BAC$) is the estimate to complete (ETC). See J. Davidson Frame's "Integrating Cost and Schedule Control to Measure Work Performance" in *The New Project Management*, Jossey-Bass, 1994; Christen, Major, and Ferns' "Using Earned Value for Performance Measurement on Software Development Projects," *Acquisition Review Quarterly*, Spring 1995, pp. 155-69; David Christensen's "The Cost and Benefits of the EVM Process," *Acquisition Review Quarterly*, Fall 1998, pp. 373-83; Fleming and Koppleman's "Earned Value Project Management—a Powerful Tool for S/W Projects," *Crosstalk*, July 1998, pp. 19-23; and "Major Acquisitions—Significant Changes Underway in DoD's EVM Process" GAO/NSIAD-97-108, May 1997 (IRMC Advanced Software Acquisition Management Course).

Winsight tool: (Select Operations; Strategic Planning and Policy Coordination, Software Acquisition Risk Management): <http://www.sed.monmouth.army.mil/se>
<http://www.acq.osd.mil/pm>

National Contract Management Association (NCMA): <http://www.ncmahq.org>.

It is a gentleman's first duty to put back into the world at least the equivalent of what he has taken out of it. (Albert Einstein, quoted by Harold B. Walker in "Four Challenges to Hope," *Rosicrucian Digest*, Vol. LI No. 4, April 1973.)

C/SCSC curves are like a lie detector test. (CAPT Dave Fitch, USN, PMW101 May 9, 1995.)

Economic Espionage Act (EEA) of 1996, P. L. 104-294, 10/11/96

Specifically proscribes economic espionage acts (filling gaps and inadequacies of prior laws) and the national security aspects of such crimes. Provides forfeiture of proceeds, confidentiality of prosecution, and extraterritorial jurisdiction. It makes theft of trade secrets a federal crime with stiff penalties/prison sentences and includes attacks on computers and their informational contents (IRMC Assuring the Information Infrastructure Course).

The reason we do not have inflation or unemployment in Austria is, we've exported all our economists to the United States and Canada. (Anonymous Austrian diplomat, in 3,500 *Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 78.)

electronic Business (eB or eBusiness)

The electronic interchange and processing of knowledge, information, and data for business purposes. It encompasses eCommerce but also includes digitizing or automating other business processes. It implies, but does not ensure, the application of business process improvement or reengineering to streamline business processes prior to the incorporation of technologies facilitating the electronic exchange of business information. If applied only cosmetically ("paving the cow paths"), it provides little improvement in operations or efficiency. DoDD 8190.2, DoD eB/eC Program, applies DoDD 5200.28 (*Security Requirements for AISs*) to eB and eC systems and states that "eB/eC information must be exchanged, processed, stored, manipulated, and disseminated with the assurance that it is not being exploited, modified, or disrupted by adversaries, interlopers, or competitors." The Department of Defense (DoD) Chief Information Officer issued the DoD EB/EC Strategic Plan in May 1999 (IRMC Managing Networked Security in a Networked Environment Course). See IBM/Lotus <http://www.techweb.com/netbiz>, and <http://www.compaq.com/solutions/showroom/siebel.html> (IRMC Data Management Strategies and Technologies Course). "It's eBiz or bDead" (*CERIAS Security Visionary Roundtable Call to Action*, v. 1.0, p. 22; Accenture (formerly Anderson Consulting) and The Center for Education and Research in Information Assurance and Security (CERIAS) at Purdue University, 2001) (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course). "Visa International recently reported that half of all credit card disputes concerned Internet transactions, although they accounted for only 2 percent of its overall business. Businesses must be able to identify a customer and

determine that the customer's use of the credit card is authorized, and in turn, customers must be assured on the legitimacy and security of the business site." (Walker, Peter. "Watch out for the Web," *Credit Management*, March 2000. pp. 24-25, as quoted by Garceau, Linda R. "Internet fraud" *Ohio CPA Journal*, Columbus July-September 2000, Vol. 59, Issue 3, Pages 50-55, 423-439-4432). Presently, many Web sites employ Secure Sockets Layer encryption to ensure confidentiality, integrity, and authenticity of the data. But it does not authenticate the customer to the merchant⁸ (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course author's final paper, *PKI Vulnerabilities*).

Defense Electronic Business Program Office:

<http://www.defenselink.mil/acq/ebusiness/>

Alliance For Converging Technologies: <http://www.actnet.com>

Business 2.0: <http://www.business2.com>

Cyber Atlas: <http://www.cyberatlas.internet.com>.

So SF [Science Fiction] teaches us that those who do not remember the future are condemned to repeat it. (Nancy Burnett, NAVSEA)

electronic Checks (e-Checks) or Digital Checks

E-checks were designed specifically for the Internet. They are digitally signed and e-mailed with payment related information to the payee. The payee then verifies the identity of the payer, endorses the check with his or her own digital signature, and deposits (e-mails) the e-check to a financial institution. The Department of the Treasury began using e-checks in 1998. Over \$10 million in e-checks has been issued. E-checks can substantially reduce the cost of business (*Leadership for the New Millennium: Delivering On Digital Progress and Prosperity*, third annual report of the U.S. Government Working Group on Electronic Commerce, January 16, 2001).

A nickel ain't worth a dime anymore. (Yogi Berra, *The Yogi Book*, Workman Publications, New York, 1998, p. 19.)

electronic Commerce (eC or eCommerce)—see eBusiness, Business Process Reengineering

The buying and selling of goods and services on the Internet, especially the World Wide Web. Often this term and the term "eBusiness" are used interchangeably. In practice, e-Commerce is usually restricted to the process of buying, selling, and paying; e-Business refers to the digitalization of a vast area of business processes. For online retail selling, the term entailing is sometimes used (*Glossary of IM/IT & KM Terms*). IRMC identifies six eC levels: simple passive advertising, tracking "hits" to understand demographics, generating leads (visitors leave information), allowing visitors to order items, order fulfillment directly via the Internet, and active content and service oriented. Secure eC transactions can be performed in different ways, including cybercash, DigiCash, e-checks, First Virtual, and secure electronic transfer (SET) (IRMC Managing Networked Security in a Networked Environment Course). The IRMC New World of the CIO Course defines eC as "the use of IT as a tool to support commerce." Examples

include: home banking, home shopping, e-cash, smart cards, electronic data interchange, interactive marketing and sales, interactive advertising. It is a more efficient means of doing business because of lower purchasing costs, reduced inventories, lower cycle times, better customer service, lower sales and marketing costs, and new sales opportunities. Booz-Allen and Hamilton estimates that it costs about a penny to conduct a banking transaction via Internet versus one dollar via a physical bank teller. Online retail sales were \$7.8 billion in 1998, but are expected to reach \$29.6 billion (Jupiter Communications) to \$220 billion (IDC) in 2001. The Navy/Marine Corps Intranet (NMCI) contract requires EDS Corp. to deliver a Web-based tool for ordering, invoicing, and payment of services ordered under the NMCI contract. Hundreds of transactions have been completed thus far.

However, organizations that rush to create electronic commerce sites without understanding the fundamental relationship of business and technology leave themselves open to catastrophic results <http://www.techrepublic.com/> and <http://members.aol.com/lpang10473/ec.htm> (IRMC Critical Information Systems Technologies Course). AUCNET is a proprietary computer and satellite communications system for selling used cars. It clearly differentiates between the traditional marketplace and the virtual market space. EC is used in many markets including (in order of sales in 1997 according to Forrester Research, Inc.): computer products, travel, entertainment, gifts/flowers, apparel, food/drink, other.

Government resources include:

Federal eC Program: <http://ec.fed.gov>

DoD eC Office: <http://www.acq.osd.mil/ec/>

U.S. government policy: <http://www.ecommerce.gov>

Scranton ECRC: <http://www.ecrc.uofs.edu/>.

Government storefronts include: <http://www.gsa.gov>, <http://www.sewp.nasa.gov>, and <http://www.emall.dla.mil>.

Other storefronts include: <http://www.amazon.com>, <http://www.virtualvin.com>, <http://www.peapod.com/>. Also see eCommerce news at <http://www.allec.com> (IRMC Data Management Strategies and Technologies Course).

IT/KM/eC tools: <http://www.microsoft.com/indonesia/enterprise/itadvisor.html> ; <http://www.acq.osd.mil/ec/> (IRMC Critical Information Systems Technologies Course). In an ITAA survey, 62 percent of executives names "lack of trust" as the top barrier to eC (IRMC Assuring the Information Infrastructure Course). On November 30, 2000, the European Ministers of Justice and Internal Affairs adopted a regulation such that a consumer in one EU nation having a dispute over a product purchased in another EU nation may sue the retailer in the consumer's own nation. This is likely to affect e-tailors with only a virtual presence in some EU nations (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

Digital Commerce Center, University of Southern California:
<http://www.ec2.edu/dccenter/ok/seminars.html>

E-Commerce Times: <http://www.ecommercetimes.com>

Fast Company: <http://www.fastcompany.com/homepage/>

Online merchants and off-line services for comparison prices, descriptions,
availability: <http://www.mysimon.com>

Space and Naval Warfare Systems Command: <https://e-commerce.spawar.navy.mil>.

Lose no time; be always employed in something useful; cut off all unnecessary actions.
(*Time Management*, p. 42. Winwood, Richard I. *Excellence through time management* by
Richard I. Winwood, with Hyrum W. Smith. Salt Lake City, Utah: Franklin Institute, c1985.
138 p. ill. ; 23 cm.)

Electronic Communications Privacy Act (ECPA), 10/21/86, P. L. 99-508—see Privacy Act of 1974 and Foreign Intelligence Surveillance Act

Prohibits unauthorized interception of electronic communications (e-mail, data transmissions, videoconferencing, digitized voice, cordless, and cellular telephones, etc.); prohibits unlawful access to or divulging of stored communications; covers private networks and common carriers; has exceptions for law enforcement, consensual monitoring, and operational management of systems. It updates the federal privacy clause in the Omnibus Crime Control and Safe Streets Act of 1968 to include voice, video, and data whether transmitted over wire, microwave, or fiber optics. It did not include cordless phones, but the Communications Assistance to Law Enforcement Act added them so warrants are now required for them (IRMC Assuring the Information Infrastructure Course).

If he does his job properly, he'll understand the purpose of the rules and therefore know when it is appropriate to make exceptions. (Orson Scott Card, *Shadow of the Hegemon*, Tom Doherty Associates, New York, 2000, p. 138.)

Electronic Data Interchange (EDI)

The computer-to-computer exchange of business data between enterprises. EDI has been used, for instance, for business-to-business-type transactions with long-term industry partners. It can be useful for business process reengineering efforts; however, it has been (to a significant degree) overshadowed since the rise of the Internet. While EDI can be more technically secure, it also increases risk due to the required trust in one's EDI partner(s). The information sent via EDI is in the form of a transaction set patterned after a conventional paper document such as an invoice or purchase order. It can reduce inventory requirements. In practice, EDI uses an intermediary called a value-added network (VAN) that acts as a clearinghouse (though point-to-point connections can also be used via dedicated or leased lines). EDI is tailored to specific user needs and can reduce costs, order time, and error rates. EDI uses ANSI X12 and UN/EDIFACT standards that define formats, structures, transaction sets, etc. Standards provide broad definition of document contents while implementation conventions (ICs) between specific users identify specific data and information to be shared. However, ICs are often designed for an industry as a whole. An EDI electronic document is wrapped in an

electronic envelope; EDI software translates the form into EDI format; EDI communications/computing equipment process the documents. DoD help lines: (888) 352-9333 or (616) 961-4725, DSN: 932-4725; fax is (616) 961-5305. Or: <http://www.acq.osd.mil/ec/> and dlis-support@dlis.dla.mil (IRMC Data Management Strategies and Technologies Course).

Dear God, give us strength to accept with serenity the things that cannot be changed. Give us the courage to change the things that can and should be changed. And give us wisdom to distinguish one from the other. (Admiral Hart, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 62.)

Electronic Freedom Of Information Act (e-FOIA)

Freedom of Information Act pertaining to electronic forms and documents. The Electronic Freedom of Information Act Amendments of 1996 (eFOIA), which are designed to bring the Freedom of Information Act into the electronic age by establishing that FOIA applies to records maintained in electronic formats (softcopy) as well as hardcopy (*Glossary of IM/IT & KM Terms*). The intention is to broaden public access to government information by placing more records online. It is facilitated by directives establishing the validity of electronic signatures for the vast majority of document types.

They that give up essential liberty to obtain a little temporary safety deserve neither liberty nor safety. (Benjamin Franklin, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983 p. 136.)

Electronic Funds Transfer (EFT) or Electronic Financial Transactions

EFT includes electronic transactions and payments. For instance, the Department of the Treasury now auctions U.S. Treasury securities, and products are entirely electronic. Its "Savings Bonds Connection" is one of its most popular Web sites. The Department of Transportation held a conference on EFT in September 2000 in Washington, DC, (<http://www.treas.gov/ofit/agenda.htm>). The Defense Finance and Accounting Service (DFAS) now pays DoD employees electronically and provides the Employee/Member Self Service (E/MSS) Web site where employees can view their leave and earnings statements, change their exemptions, etc. <http://emss.dfas.mil/emss.htm>.

Up and down the City Road,
In and out the Eagle,
That's the way the money goes—
Pop goes the weasel!

(W. R. Mandale, 19th century, "Pop Goes the Weasel," from *The Oxford Dictionary of Quotations*, Oxford University Press, New York, 1980, p. 328, No. 10.)

Electronic Government (e-Gov)

1) The conversion of government operations by introducing electronic processes to improve efficiency and facilitate access to government information via the Internet and electronic media. In the Department of the Navy, eGov is specifically and actively pursued through integrating KM and e-Business. See e-check, electronic funds transfer,

Government Paperwork Elimination Act, etc. Applicants for federal trademark registration, for instance, can now use the Trademark Electronic Application System (TEAS) to submit almost all trademark-related forms electronically. Already more than 10 percent of trademark applications are submitted electronically (<http://teas.uspto.gov/>).

2) eGov is also a nonprofit organization that presents conferences on e-government and related topics on a regular basis. Such conferences each have a motif specific to that conference.

Information Technology: OMB Leadership Critical to Making Needed Enterprise Architecture and E-government Progress. GAO-02-389T (28 pp.) March 21, 2002, <http://www.gao.gov/new.items/d02389t.pdf>.

He who has begun has half done. Dare to be wise; begin! (Horace, ii, 40, *Epistles*, book I from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 123.)

Electronic Learning (e-learning)—see Distributed Learning

Training or organized learning without the physical presence of a teacher. A variety of methods and media can be used to deliver the instruction: audiovisual, CD-ROMs, video-teletraining, correspondence courses, interactive television or video-conferencing, etc.

The chief knowledge that a man gets from reading books is the knowledge that very few of them are worth reading. (H. L. Mencken, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 131.)

Electronic Mail (e-mail)

A software application that allows asynchronous message transmissions between computers and users. They are now contractor off-the-shelf (e.g., Microsoft Outlook) and generally unsecured. See Richard Behar's "Who's Reading Your e-mail?" *Fortune*, Vol. 135, No. 2, February 3, 1997, pp. 56-70 (IRMC Advanced Software Acquisition Management Course). Encryption techniques (e.g., public key infrastructure) can protect the contents of e-mail. Alternately, Virtual Private Networks can be used.

I do not look upon any system of wireless telegraphy as a serious competition with our cables. Some years ago I said the same thing and nothing has since occurred to alter my views. (Sir John Wolfe-Barry, Chief Executive of Western Telegraph Company at their annual stockholder's meeting in 1907. (Christopher Cerf and Victor Navasky in *The Experts Speak*, Villard, NY, 1984, p. 136.)

Electronic Signature (e-sign) Act

The electronic signatures in global and national commerce act, enacted on June 30, 2000 and effective as of October 1, 2000, eliminates legal barriers to the use of electronic technology to form and sign contracts, collect and store documents, and send and receive notices and disclosures (from *Glossary of IM/IT & KM Terms*). Technically, electronic signatures include devices whereby the customer physically enters his or her actual signature on a device that digitizes the signature. Antithetically, digital signatures do not resemble physical signatures at all, but are a computer generated (encrypted) set of characters.

Some people include a biometric versus a physical signature as an electronic signature if it is modified via a hash algorithm. While electronic and digital signatures do provide nonrepudiation, they do not replace trust between individual people (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

The 90-90 rule of project schedules: The first 90 percent of the project takes 90 percent of the allotted time. The last 10 percent takes the other 90 percent. (received via Internet e-mail; author unknown. Probably inspired by Frederick P. Brooks' classic: *The Mythical Man-Month, Essays on Software Engineering*, Addison-Wesley, Reading, MA, 1982.)

30. (von Tiesenhausen's Law of Engineering Design): If you want to have a maximum effect on the design of a new engineering system, learn to draw. Engineers always wind up designing the vehicle to look like the initial artist's concept. (David Akin, professor, University of Maryland, "Akin's Laws of Spacecraft Design" Dr. Akin dakin@umd.edu or DAKIN@SSL.UMD.EDU. See http://spacecraft.ssl.umd.edu/academics/akins_laws.html.)

Electronic Vaulting

An off-site backup technique that can be part of an organization's COOP and disaster recovery strategy. It captures databases and files. It is similar to journaling, but journaling captures transactions.

13. Design is based on requirements. There's no justification for designing something one bit "better" than the requirements dictate.

14. Edison's Law: "Better" is the enemy of "good." (David Akin, professor, University of Maryland, "Akin's Laws of Spacecraft Design" [received via Internet e-mail] and confirmed by Dr. Akin dakin@umd.edu or DAKIN@SSL.UMD.EDU. See http://spacecraft.ssl.umd.edu/academics/akins_laws.html.)

Encryption—see Cryptography

The cryptographic method of protecting information from disclosure to unauthorized persons by encoding the information via algorithm that utilizes protected keys. The keys may be symmetric or asymmetric. Public key infrastructure uses asymmetric keys (see asymmetric cryptography above). The strength of the encryption depends upon the number of bits used in the algorithm. The time it would take to crack the code depends upon the strength.

Encryption Key Strength⁹

Key size: No. of bits	Key space: No. of possible keys	Time required for a home computer to break	Time required for a supercomputer to break
16	65.5 thousand	33.6 ms	Negligible
32	4.3 billion	36 minutes	2.2 ms
64	1.8×10^{19}	4.5 years	10 hours
128	3.4×10^{38}	5.4×10^{24} years	5.4×10^{18} years
256	1.16×10^{77}	1.9×10^{63} years	1.9×10^{57} years

Weak encryption stops your kid sister from reading your files, strong encryption stops major governments from reading your files (*Applied Cryptography: Protocols, Algorithms, and Source Code in C* by Bruce Schneier) (IRMC Managing Networked Security in a Networked Environment Course). Freeware file encryption: <http://www.pcmag.com> (IRMC Assuring the Information Infrastructure Course).

If you tell what you know, everybody is wiser. If you keep a secret, then everyone is a fool. (Orson Scott Card, *Xenocide*, Tom Doherty Books, New York, 1991, p. 511.)

Enhanced Data GSM Environment (EDGE)

A faster version of the global system for mobile (GSM) wireless service designed to deliver data at rates up to 384 kbps and enable the delivery of multimedia and other broadband applications to mobile phone and computer users. The EDGE standard is built on the existing GSM standard, using the same time-division multiple access (TDMA) frame structure and existing cell arrangements. Ericsson notes that, when available, its base stations can be updated with software (*Glossary of IM/IT & KM Terms*).

Law of hydrodynamics: When the body is immersed in water, the telephone rings. (3,500 Good Quotes for Speakers, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 212.)

Enterprise—see Interoperability

An organization considered as a whole entity or system. Enterprises today are viewed as open systems—interacting with other systems and with their environments versus closed systems that are self-sufficient. Thus, enterprises now consider relations management in working with customers and suppliers and metrics experts emphasize outcomes (interactions with the environment and its denizens) rather than outputs (inherent in the enterprise itself). The latter, in mathematical terms would be considered intermediate variables or conditional probabilities. Enterprises have a degree of homogeneity within and heterogeneity without (interfacing with external entities). Each government agency is generally viewed as an individual enterprise. However, in the Department of Defense (DoD), each department is usually (except for joint programs) viewed as an enterprise. While there are efforts to consider the entire federal government as an enterprise, the diversity of activities and orientations indicates that it is more a conglomerate than a true enterprise (it's not homogeneous enough). Indeed, in a doctoral course at the George Washington University, a professor wished to compare and contrast business processes between and among government, industry, and nonprofit organizations. But, this anecdotal and informal survey demonstrated that while industry and nonprofits were consistent within their categories, the government was not. Upon investigation, it became quite apparent that the problem lay in the differences between civilian and military departments. A continuum appeared to exist:

nonprofits civilian agencies

military departments

industry

Note the small differences between the first two and between the last two and the large difference between the civilian and military departments. The great benefits from an

enterprise approach (basically a systems thinking and engineering approach) are based upon the shared goals and essence, culture, values, etc., of the enterprise. The military departments do vary somewhat in these areas, but they exhibit considerable similarities as well. The same cannot be said of the civilian agencies versus DoD. Thus, as noted or implied by the Chief Information Officer Council's subgroup on the federal architecture framework, the potential gains for a federal architecture are quite limited (estimated at 20 percent). One might argue that most of these potential gains would result from standardizing across civilian agencies versus integrating them with DoD. A scientific and systems approach (e.g., using the scientific method) would balance the advantages and disadvantages of centralization versus decentralization. It would also consider the ends and the means.

The greatest use of a life is to spend it for something that outlasts it. (Henry James, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 215.)

Enterprise Application Integration (EAI)

An integrated approach to introducing and implementing IT whereby an integrator provides the entire solution (similar to a prime contractor or systems integrator in the acquisition community) and is, thus, responsible for overall system performance. Thus, for instance, the EAI vendor might choose a particular enterprise resource planning (ERP) solution that would not meet all the customer's requirements, but would also select compatible bolt-ons or auxiliary software (and modifications) to achieve overall system performance requirements. See Derek Slater's "The Ties That Bolt," *CIO Magazine*, April 15, 1999, for a discussion of bolt-ons and their application to ERP as well as of EAI (http://www.cio.com/archive/041599_erp.html) (IRMC Critical Information Systems Technologies Course).

The obscure we see eventually, the completely apparent takes longer. (Edward R. Murrow, quoted by Lawrence J. Peter in *The Peter Prescription*, William Morrow & Co., New York, 1972, p. 167.)

Enterprise Resource Planning (ERP)

ERP is a software package that integrates what were formerly different databases (hard or soft copy) across an enterprise. Such different domains as human resources, finance, etc., can be included in the package. While the ERP uses a particular database (often the customer can select from several options for a given ERP vendor's product), the ERP itself includes a set of business rules (and metadata) that can, to a degree, be tailored to individual customer needs. Beyond this defined set of tailoring options, the customer can write new code that extends or changes the ERP. However, the ERP vendor will not support any special code unless the customer can entice that vendor to include the changes in a future version of the ERP. If the change is beneficial to other ERP customers, the vendor may elect to do so. For instance, the Navy Standard Integrated Personnel System (NSIPS) purchased PeopleSoft ERP. It included software buttons to store and recall user comments. However, users could not tell, without pushing the buttons) whether there were existing comments already loaded. NSIPS wrote code to highlight

these buttons (blacken them) if they accessed a comment (they were gray if there was no comment). Since this was advantageous to all users (not just NSIPS), PeopleSoft elected to include it in future upgrades to its ERP package—saving NSIPS the maintenance costs for the unique modification. Of course, this could also be touted as a successful use of customer. *CIO Magazine* (October 15, 1999) describes how David Johns of Owens Corning used ERP but had to revise business practices and address customer interfaces as well (http://www.cio.com/archive/101599_erp2.html). For the Navy's plan to introduce ERP and standard data elements, see Robert Berg and Corbin Fauntleroy's *A Brief History of the ERP Efforts in the Revolution in Business Affairs*, Center for Naval Analyses, Alexandria, VA, September 1999: <http://www.cio.com/forums/erp/articles.html>; <http://members.aol.com/lpang10473/enter.htm>;

The Ties That Bolt and two other articles:

http://cio.com/archive/041599_erp_content.html;

<http://www.peoplesoft.com/>;

http://www.sap.com/products/industry/public/pub_over.htm (IRMC Critical Information Systems Technologies Course). There are numerous ERP Web sites, including: <http://www.erpfans.com/>; <http://www.erpsupersite.com/>; <http://www.erpassist.com/>, etc.

You can't jump 70 percent of the way across a chasm and be successful. (H. Edward Cypert, TRW president for operations, before the Government Reform and Oversight Committee, May 25, 1995.)

Enterprise Software Initiative (ESI)

An initiative (e.g., by the Department of Defense Chief Information Officer) to develop an enterprise-oriented business process for software asset management utilizing enterprise software agreements (ESAs). ESAs are contracts (often blanket purchase agreements, BPAs) to acquire software assets for enterprise-wide use. This approach increases interoperability within the enterprise, through the purchase of standardized assets. Such assets can be software products or licenses. Enterprise purchases or licenses can leverage organizational buying power as well as improve efficiency by consolidating requirements so as to reduce total ownership costs (TOC or TCO). The presumption is that by developing and implementing an enterprise-wide process for identifying, acquiring, distributing, and managing IT, IT portfolio management can be instituted to attain substantial cost savings while improving system usability and interoperability—obtaining synergistic gains.

Equations are more important to me. Because politics is in the present, but an equation is something for eternity. (Albert Einstein, quoted by Stephen Hawking, *The Illustrated A Brief History of Time*, Bantam Books, New York, 1996, p. 235.)

Enterprise Solutions (ES)

A Navy initiative to institute enterprise-wide perspectives into the management of IT programs, applications, and assets. The approach is to work within each functional community (e.g., logistics, personnel, etc.) to consolidate redundancies while introducing best of breed (lessons learned, software re-use, best practices) across each functional

community (led by a functional leader). Additionally, executive-level cross-functional groups will apply similar principles across the functional areas. This approach will dovetail into Navy/Marine Corps Intranet applications support and implementation. ES is facilitated under the auspices of the Program Executive Office for Information Technology (PEO-IT) and the Enterprise Acquisition Manager for Information Technology (EAMIT). The intention is to involve stakeholders from operational, resource, and acquisition communities.

How wonderful it is that nobody need wait a single moment before starting to improve the world. (Anne Frank, quoted by Noah ben Shea in *Great Jewish Quotes* Ballantine, New York, 1993.)

Entity-Wide Security Program (EWSP)—see A-130, Federal Information Technology Security Assessment Manual, Federal Managers Financial Integrity Act, and National Institute for Standards and Technology

A framework for assessing risk, developing and implementing security procedures, and monitoring the effectiveness of those procedures. It includes both policies and an implementation plan and represents the foundation of an enterprise's control structure. It reflects senior management commitment to security. An EWSP should periodically assess risk, document an EWSP plan, establish a security management structure and clearly assign security responsibilities, implement effective security-related personnel policies, and monitor the security program's effectiveness (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

Equivalent-Forms Reliability

A technique for estimating instrument reliability in which scores are compared from two different versions of the same instrument administered to the same group of subjects at different times (IRMC Measuring Results of Organizational Performance Course).

He uses statistics as a drunken man uses lampposts—for support rather than for illumination. (Andrew Lang, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 228.)

Ethernet

The most popular form of local area network (LAN) connectivity. It was invented by Xerox Corp. and typically uses coaxial cable or other special grades of wiring that can provide high-speed communication to users on a network. Formerly, asynchronous transfer protocol (ATM) was touted as faster than Ethernet due to the latter's bandwidth limitations; however, Ethernet has now vastly expanded its capacity. Ethernet is a first-come, first-served system without innate priorities.

Not merely a chip off the old "block," but the old block itself. (Edmund Burke, 1727–97, *On Pitt's First Speech*, 1781, from *The Oxford Dictionary of Quotations*, Oxford University Press, New York, 1980, p. 110, No. 22.)

eTrust

A program that promotes sensitivity to Web site privacy. Web sites can apply for the eTrust program; if accepted they can display their membership that attests to their formal acceptance of user privacy agreements promoted by eTrust. Many sites now prominently display their privacy statements.

No one is useless in this world who lightens the burden of it to anyone else. (Charles Dickens, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 40.)

European Union (EU) Basic Principles for Data Protection—see Council of Europe Convention

Data obtained and processed fairly and lawfully; stored for specified and legitimate purposes; data relevant, not excessive to purpose; accurate and kept up to date; stored for no longer than required; personal data on racial origin, political opinions, religious or other beliefs, health or sexual life may not be processed without appropriate safeguards; appropriate data security measures required (IRMC Assuring the Information Infrastructure Course). Directive 95/46/EC concerns the processing of personal data and the free movement of such data. Directive 97/66/EC concerns protection of privacy in the telecommunications sector (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

Mohandas Gandhi's devastating reply to an Englishman who asked his opinion of Western civilization: "I would be all in favor of it." (*Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 93.)

Evernet

The billions of computing devices that are always on and connected (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course). Such innovations as DSL have added greatly to this field.

Our national flower is the concrete cloverleaf. Lewis Mumford (quoted by Robert Byrne in *The 637 Best Things Anybody Ever Said*, Atheneum, NY, 1982, #498.)

Executive Information System (EIS)

An application that supports executives by providing graphical user interfaces to data. They serve as "information portals" to various information sources for the intelligence to run the enterprise (IRMC New World of the CIO Course).

Can you think of less interesting or more incompetent managers than those who pride themselves on not engaging in nonsense? (Jerry B. Harvey, *The Abilene Paradox and Other Meditations on Management*, Lexington Books, Lexington, MA, 1988, p. 48.)

Experimental Mortality

Some of the subjects being studied may drop out from the intervention during the period of the study, especially if the intervention lasts a long time. It is therefore possible that the change from premeasure to post-measure can be accounted for by the fact that the

group membership changed from pretest to post-test (IRMC Measuring Results of Organizational Performance Course).

The origin of the symbol Rx, found in the upper left-hand corner of every prescription, goes back 5,000 years. The Egyptians used the magic eye of Horus as an amulet to guard them against disease and suffering. The eye has two tails hanging from the center, and centuries later it appeared in a form resembling our numeral 4. Physicians scribbled it on their prescriptions to invoke the assistance of Jupiter. By slow transformation, the numeral changed into Rx. (T. R. Von Dellen, *Chicago Tribune*, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 264.)

Expertise Locator—see Knowledge Map

A directory that with profiles of an organization's individuals used to locate specific expertise within the organization. Experts so located can help answer questions or be requested to participate on specific projects. Knowledge workers routinely use such directories to quickly find colleagues who specialize in, know, have dealt with, or are interested in particular work and knowledge areas ("The smartest bird: With development of Raven, Lotus shows it understands knowledge management is action," *Knowledge Magazine*, <http://www.destinationcrm.com/articles/default.asp?ArticleID=1786&KeyWords=expertise++AND+locator> *CRM Magazine* (Customer Relationship Management) [USA].

Wise men learn more from fools than fools from wise men. (Cato, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 272.)

Expert System

Expert systems are an implementation of artificial intelligence. Human experts (mavens) input rules for solving a particular range of problems or processes to accomplish certain ends. These rules are codified into a computer software algorithm or program which users can utilize to guide future solutions to problems within the range of the expert system. Since the time and cost of creating an expert system can be very significant, they tend to be narrowly delimited in scope. Such factors have greatly reduced the application of expert systems despite early predictions of universal use and their replacement of people for numerous tasks. Telephoning many organizations today results in an automated, aural, routing system in which a recording or computer asks the caller a series of nested questions to, at long last, direct the caller to the proper information or resource. While such a system is cheaper than hiring a cadre of people to route caller questions, it tends to be much slower and quite taxing to callers. This is a typical difference between querying an expert system vice asking a maven for advice. Computers are presently limited to providing information to people. People generally are not so limited (depending on individual ability) and can provide knowledge directly to the enquirer rather than force the enquirer to translate provided information into knowledge. Nevertheless, a well-constructed expert system can provide real-time decision support if properly used (cf. Case-based reasoning).

Expert systems are the most mature form of intelligent decision systems. They capture KM-like "rules" from experts. The military use them for force planning and logistics; the

Internal Revenue Service and the Environmental Protection Agency use them for regulatory processes; and the medical community uses them for diagnosis and prescriptions. There are thousands (estimated 30,000 in year 2000) currently fielded with payoffs typically of 100:1 or more. One of their great advantages is that they are available 24-7. Merced County, CA, created the Merced Automated Global Information Collector (MAGIC) to assist welfare workers.

Criteria	Customers/worker/ month	Time for an answer for customer	Morale	Savings
Before MAGIC	180	3-5 weeks	Abysmal	0 = base
With MAGIC	300	2-3 days	Soaring	\$1 million/year

The State of Tennessee implemented TOMIS for its penal system sentencing. TOMIS improved accuracy from 80 percent to 100 percent and saves 37,500 labor hours per month. IRMC has a free downloadable expert system called EXSYS. Also see <http://www.multilogic.com> and <http://ai.iit.nrc.ca/subjects/Expert.html> (IRMC Critical Information Systems Technologies Course).

Trust one who has gone through it. (Virgil, quoted in *The Oxford Dictionary of Quotations*, Oxford University Press, New York, 1980, p. 559, No. 10.)

Explicit Knowledge

Formal, documented knowledge identifiable in such items as policy documents or operations and procedures manuals. Any codified document containing knowledge is explicit. It's opposite is implicit or tacit knowledge. New hires from college, for instance, have absorbed quantities of explicit knowledge through reading and document research. However, they must be "socialized" by their new working organization to be able to work effectively within it. This process entails their absorbing quantities of tacit knowledge not written down, but agreed upon or observed by the other employees. Reading an employee manual may be helpful, but it does not impart the required tacit or implicit knowledge recognized, but not necessarily readily explicated by more seasoned employees. Cf. *The Social Construction of Reality: A Treatise in the Sociology of Knowledge* by Peter L. Berger and Thomas Luckmann. 1st Irvington ed. New York: Irvington Publishers, 1980, c1966. vii, 203 p. ; 22 cm.

The fact that an opinion has been widely held is no evidence whatever that it is not utterly absurd; indeed, in view of the silliness of the majority of mankind, a widespread belief is more likely to be foolish than sensible. (Bertrand Russell)

Extended Service Set (ESS)—see IBSS and BSS

A wireless LAN architecture that has a distribution system (DS) that connects multiple access points (APs) that serves multiple basic service sets and individual workstations.

It's not too far, it just seems like it is. (Yogi Berra. *The Yogi Book*, Workman Publications, New York, 1998, p. 100.)

eXtensible Markup Language (XML)—see Networked Improvement Community and Webification, <http://www.w3.org/XML>

Provides a standard way for programmers and other users to exchange information about metadata (essentially, information about what a set of data consists of and how it is organized). Specifically, XML is intended to help programmers using the unified modeling language (UML) with different languages and development tools to exchange their data models with each other. In addition, XML can also be used to exchange information about data warehouses. Effectively, the XML format standardizes how any set of metadata is described and requires users across many industries and operating environments to see data the same way. XML statements define data content, whereas the hypertext markup language (HTML) lines deal with fonts and boldface. XML defines “what it is,” and HTML defines “how it looks” (*Glossary of IM/IT & KM Terms*). Structurally, XML statements are HTML statements with descriptive or definitive tags added thereto which describe the content in terms of what data is being described. XML provides a flexible way to create information formats and share format and data via the Internet. XML files can be processed purely as data or displayed then processed (similar to HTML). They can be exported to other applications and even dialed. It creates self-describing data (similar to FORTRAN format statements) that essentially embeds metadata into the dataset (IRMC Data Management Strategies and Technologies Course).

XML is the starting point for many of the Internet- and voice-based technologies that can be used to improve access to government goods and services, and therefore can alleviate many of the barriers to receipt of government information associated with digital disparities. XML itself is a promising notation system for representing the underlying structure and meaning of electronic information, whether it be data, text, or sound. This system and its variants (e.g., voice XML and wireless markup language) play an important role in providing goods and services directly to the public through telephone based services with speech recognition or text-based materials on the Internet. XML functions by employing markers, or tags that accompany the electronic data in agreed upon ways. These tags, and the structures that govern them, mean that XML can simplify and unify the sources of data to reduce the burden of managing multiple sources of data. These same characteristics allow information to be reused, databases to be consolidated, and disparate databases to be accessed, resulting in lower maintenance and usage costs. Data that is managed once can then be accessed through multiple channels, whether it is shared directly with the public by the federal government or is shared with a state or local government who then publish the information. Many industries and scientific disciplines are already using XML to exchange information across platforms and applications. Because XML separates data from presentation, XML users can extract only the data needed. The implications are enormous for massive manuals, project schedules, etc., on the Web that would be overwhelmingly complex if the specific information needed couldn't be extracted quickly and easily.

Federal agencies that want to take full advantage of XML and its data reuse and repurposing capabilities must first establish a “vocabulary” for the information to be shared, and then organize that vocabulary in an approved manner. Several national and international organizations have evolved to facilitate the efficient use of XML data. These

organizations and the standards that have been established ensure that the information managed in an XML format bears the increasingly important characteristics and attributes of a well-formed record: reliability, authenticity, integrity, and usability. Utah's new Traveler Advisory Telephone and Internet System illustrates the potential of XML. Other states are also using XML. The Michigan state legislature converted its compiled law to XML, which makes it easier to offer the documents online in multiple formats (HTML and portable document formats). This action not only helped state agencies to improve the production and management of their legislative process, but also enables the public to access documents without the need for a legal researcher. At some point, the public will be able to see the relationship between legislative actions and results of those actions expressed in government records. Visitors can draw from different sources to build their own customized output documents. More than 6,000 people use the system every day, with more than 43 million hits since the system was launched two years ago.

The National Archives and Records Administration and the Government Printing Office (GPO) are moving from standard generalized markup language to XML. XML offers more tools and Web renderings. XML enables applications to:

- 1) mediate between two disparate database;
- 2) present different views of the same data to different users; and
- 3) support intelligent agents that tailor information discovery processes to the needs of individual users.

Agencies that submit documents to GPO receive a 35 percent discount for delivering text that has already been marked up in XML. XML supports the philosophy that data "belongs" to its creators, and distribution channels are best served by a data format that does not bind the content to a particular vendor's tools or platform. (Susan Turnbull, The Federal Architecture and Infrastructure Committee of the Federal CIO Council's guide, *Extending Digital Dividends: Public Goods and Services that Work for All*, on the Federal CIO Council Knowledge Management Working Group CD distributed by the DON CIO 202-501-6214 or susan.turnbull@gsa.gov). For information on the draft *DON XML Developers' Guide*, contact Brian Hopkins (editor) at: xosys@sbcglobal.net and see <http://www.xfront.com/> for a tutorial.

Clearly bounded general responsibilities paradoxically release initiative and creativity because the boundaries are clear. Unclear boundaries and lack of adequate limits always stifle initiative because people do not know how far they can push new ideas. (Elliott Jaques and Stephen D. Clement, *Executive Leadership*, Cason Hall & Co., Arlington, VA, 1991, p. 180.)

Extension

In DOS and some other operating systems, one or several letters at the end of a filename. Filename extensions usually follow a period (dot) and indicate the type of information stored in the file. For example, in the filename *EDIT.COM*, the extension is *COM*, which indicates that the file is a command file. (Depending on the operating system, the punctuation separating the extension from the rest of the filename may or may not be considered part of the extension itself), an extra feature added to a standard

programming language or system, or a plug-in (from Webopedia)
<http://www.webopedia.com/TERM/e/extension.html>.

You can never plan the future by the past. (Edmund Burke, 1727-97, in *Letter to a Member of the National Assembly*, 1791, from *The Oxford Dictionary of Quotations*, Oxford University Press, New York, 1980, p. 111, No. 31.)

External Services Providers (ESPs)

Outsourced organizations that provide computer services to other organizations (e.g., the government). While many do load-shifting at scattered sites on a regular basis, they may not be up to handling the increased load under a disaster recovery or contingency of operations scenario. Data center outsourcing contracts should fully specify such requirements. See Guttman-Stark and Bace, "Managing Security Risk with External Services Providers" (*Research Note Key Issue Analysis*, Gartner Group, October 28, 1997). (IRMC Assuring the Information Infrastructure Course.)

Problems which are not tackled directly are expressed indirectly and cause even more trouble and disruption. (Elliott Jaques, *The Changing Culture of a Factory*, Dryden Press, New York, 1952, p. 296.)

Extranet

A private wide area network (WAN) running on public protocols. The goal of most extranets is to foster collaboration and information sharing between two or more organizations. Extranets make it possible for organizations to invite selected guests to have access to their internal data through a Web browser rather than proprietary software tools. Selected guests might include customers, corporate colleagues working around the globe, or other organizations (*Glossary of IM/IT & KM Terms*).

The effectiveness of a communications system depends on the quality of the relationships between the people involved. (Elliott Jaques, *The Changing Culture of a Factory*, Dryden Press, New York, 1952, p. 301.)

F

Face Validity

A form of content-oriented validity in which consensus is obtained among a group of subject matter experts (SMEs) that the instrument completely and comprehensively covers the factor that it intends to measure (IRMC Measuring Results of Organizational Performance Course). It is obtained in the KM technique of verification. The Delphi technique was developed to eradicate some of the problems with face validity for certain types of problems. Face validity refers to how things look on their "face." A consensus can be wrong. The consensus said the sun went around the earth, that heavier objects fell faster than light ones, that the earth was flat, etc. These are samples of face validity. Kuhn addresses paradigms (reflections of the prevailing consensus) in his classic *The Structure of Scientific Revolutions*. Science depends primarily upon the epistemologies of empiricism (observation and measurement) and rationalism (conjecture, hypotheses, theories, and laws). Antithetically, face validity depends more upon authority or tradition epistemologies. While each epistemology has its own advantages and disadvantages, in a scientific analysis, face validity does not yield a high confidence level. It took the measuring of the curvature of light (when the instruments to do so became available sometime after Einstein's death) for some scientists to admit that his paradigm was better than its predecessor. But eventually, their face validity had to give way to empirical proof.

A lady in a faded gingham dress and her husband, dressed in a homespun threadbare suit, stepped off the train in Boston and walked timidly, without an appointment, into the Harvard University president's outer office. The secretary could tell in a moment that such backwoods country hicks had no business at Harvard and probably didn't even deserve to be in Cambridge. She frowned. "We want to see the president," the man said softly. "He'll be busy all day," the secretary snapped. "We'll wait," the lady replied. For hours, the secretary ignored them, hoping that the couple would finally become discouraged and go away. They didn't. The secretary grew frustrated and finally decided to disturb the president, even though it was a chore she always regretted. "Maybe if they just see you for a few minutes, they'll leave," she told him. He sighed in exasperation and nodded. Someone of his importance obviously didn't have the time to spend with them, but he detested gingham dresses and homespun suits cluttering up his outer office.

The president, stern-faced, strode toward the couple. The lady told him, "We had a son who attended Harvard for one year. He loved Harvard. He was happy here. But about a year ago, he was accidentally killed. And my husband and I would like to erect a memorial to him, somewhere on campus."

The president wasn't touched; he was shocked. "Madam," he said gruffly. "We can't put up a statue for every person who attended Harvard and died. If we did, this place would look like a cemetery." "Oh, no," the lady explained quickly. "We don't want to erect a statue. We thought we would like to give a building to Harvard." The president rolled his eyes. He glanced at the gingham dress and homespun suit, then exclaimed, "A building! Do you have any earthly idea how much a building costs? We have over seven and a half million dollars in the physical plant at Harvard."

For a moment the lady was silent. The president was pleased. He could get rid of them now. And the lady turned to her husband and said quietly, "Is that all it costs to start a university? Why don't we just start our own?" Her husband nodded. The president's face wilted in confusion and bewilderment. And Mr. and Mrs. Leland Stanford walked away,

traveling to Palo Alto, CA, where they established the university that bears their name, a memorial to a son that Harvard no longer cared about. "You can easily judge the character of others by how they treat those who can do nothing for them or to them" (an Urban Legend falsely attributed to Malcolm Forbes (founder of *Forbes* magazine [received by author via Internet e-mail], see: <http://www.harvard.edu/help/frames/faq19.html>). However, according to <http://urbanlegends.about.com/gi/dynamic/offsite.htm?site=http%3A%2F%2Fwww.snopes2.com%2Fglurge%2Fstanford.htm>.

The "rudely-spurned university endowment" theme of the Stanford story has played out at least once in real life. In July 1998, William Lindsay of Las Vegas contacted an unnamed Scottish institution of higher learning by telephone, saying he was minded to give some money to a university in Scotland. Taking him for a crank, he was rudely dismissed by the person he spoke to. His next call to Glasgow University met with a warmer reception, and in March 2000 that school received a check for £1.2 million, enough to endow a professorship in Lindsay's name.

Failover

A backup operation that automatically switches to a standby database, server, or network if the primary system fails or is temporarily shut down for servicing. Failover is a fault tolerance function of mission-critical systems that rely on constant reliability. Failover automatically and transparently to the user redirects requests from the failed or down system to the backup system that mimics the operations of the primary system. A failover site refers to the specific database, server, or network that serves this mission-critical redundancy function (*Encarta Encyclopedia Online*, Microsoft, Inc. <http://encarta.msn.com> {USA}).

Success the mark no mortal wit,
Or surest hand, can always hit:
For whatsoe'er we perpetrate,
We do not row, we're steer'd by fate.

(Samuel Butler, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 233.)

Federal Acquisition Reform Act (FARA) of 1996—see Clinger-Cohen Act (CCA)

FARA was combined with the Information Technology Management Reform Act to create the CCA.

The excessive increase of anything causes a reaction in the opposite direction. (Plato, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 207.)

Federal Acquisition Streamlining Act (FASA) of 1994—see Change Management

FASA legislated the preference for acquisition of commercial items. Commercial items are any items of a type customarily used for nongovernmental purposes that: are: offered to the general public, evolved from a commercial item but not yet available, would satisfy commercial item definition with modifications customarily available, or are services supporting commercial items. This broad definition covers a vast number of items. It was anticipated that commercial items would be cheaper, better, and faster to acquire. In the

IT world of rapid change, they also tend to be more current or state-of-the-art. Second, FASA also created micro-purchases of under \$2,500 that could be made by employees using IMPAC (International Merchant Purchasing Authorization Card = government credit cards) without competition. This was a step from "equity" towards efficiency. Effective October 1, 1997, the Under Secretary of Defense (Acquisition and Technology) forbade federal contracting officers from issuing contracts or purchase orders for micro purchases unless the vendor would not accept the IMPAC. The Fiscal Year 1998 DoD Authorization Act required that by October 1, 1999, 90 percent of all DoD purchases under \$2,500 would be accomplished using the IMPAC. This represents 50 percent of all DoD procurement! Thus, individual employees, without warrants, would be empowered to commit DoD for half of its purchases. This would save PCOs much of their time. Unfortunately, users are not necessarily well trained and organizations, being risk averse, frequently limit or control use of IMPAC so as to eliminate its inherent time and effort advantages. They ignore history's lesson. Third, FASA mandated that agencies collect past performance information (PPI), effective February 1, 1998, in order to later evaluate contractor performance for future competitive contracts. The kinds of information collected were tailored to the appropriate domain and uniform definitions of assessment elements were created. Use of PPI was mandatory for future contract awards. Finally, FASA reduced restrictions on the use of federal supply schedules (IRMC New World of the CIO Course).

Federal Acquisition Regulations (FAR): <http://farsite.hill.af.mil/>.

Tis a gift to be simple
Tis a gift to be free
Tis a gift to come down
Where you ought to be
And when we find ourselves
In the place just right
We'll be in the valley
Of love and delight.

Shaker Hymn quoted by Adam Smith in *Powers of Mind*, Ballantine Books, NY, 1975, p. 395.

Federal Activities Inventory Reform Act (FAIR) of 1998

Public Law (P. L.) 105-270 supports outsourcing and *OMB Circular A-76*. It requires submission of lists of noninherently governmental functions, ensures all costs are considered in A-76 competitions, and permits any interested party to challenge the lists of functions. It should lead to a dramatic increase in A-76 competitions.

In ancient times, a king had a boulder placed on a roadway. Then he hid himself and watched to see if anyone would remove the huge rock. Some of the king's wealthiest merchants and courtiers came by and simply walked around it. Many loudly blamed the king for not keeping the roads clear, but none did anything about getting the stone out of the way. Then a peasant came along carrying a load of vegetables. Upon approaching the boulder, the peasant laid down his burden and tried to move the stone to the side of the road. After much pushing and straining, he finally succeeded. After the peasant picked up

his load of vegetables, he noticed a purse lying in the road where the boulder had been. The purse contained many gold coins and a note from the king indicating that the gold was for the person who removed the boulder from the roadway. The peasant learned what many of us never understand. Every obstacle presents an opportunity to improve our condition. (Internet e-mail story.)

Federally Funded Research and Development Center (FFRDC)

Organizations funded by the federal government to perform specified types of research and development. These include Carnegie-Mellon University's Software Engineering Institute (SEI), the Mitre Corporation, and the Aerospace Corporation.

An expert is one who knows more and more about less and less. (Nicholas Murray Butler, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 224.)

Federal Information Technology Security Assessment Manual (FISCAM)—see National Institute of Standards and Technology (NIST)

An auditors' manual for evaluating internal controls confidentiality, integrity, and availability of data maintained in computer-based information systems. Twenty-three chief financial officer agencies now use FISCAM as a basis for controls work. See NIST Special Publication 800-XX of 3/9/01, a *Self-Assessment Guide for IT Systems* that provides a method to assess IT security programs and establish targets for improvement utilizing an extensive questionnaire with specific control objectives (301-975-3293, marianne.swanson@nist.gov). It maps to GAO's FISCAM control activities. See also NIST Special Publication (SP) 800-18, *Guide for Developing Security Plans for IT Systems* (<http://csrc.nist.gov> (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course)).

9. Not having all the information you need is never a satisfactory excuse for not starting the analysis. (David Akin, professor, University of Maryland, "Akin's Laws of Spacecraft Design" [received via Internet e-mail] and confirmed by Dr. Akin dakin@umd.edu or DAKIN@SSL.UMD.EDU. See http://spacecraft.ssl.umd.edu/academics/akins_laws.html.)

Federal Managers Financial Integrity Act (FMFIA), P. L. 97-255 of 1982—see Entity-Wide Security Program, Federal Information Technology Security Assessment Manual

Requires each agency to establish internal accounting and administrative controls and agency heads to prepare an annual statement indicating that the agency's systems of internal accounting and administrative control are or are not in compliance. Although performance measures are not specifically required, a meaningful set of performance measures linked to risks can help satisfy the reporting requirements of the act (Defense Information Systems Agency *Performance Planning Guidance* for Fiscal Year 1998, p. G-3) (IRMC Measuring Results of Organizational Performance Course). FMFIA requires agencies to conduct risk assessments to identify and prioritize their vulnerabilities to waste, fraud, and abuse and (as directed by *OMB Circular A-123*) to assess internal controls annually. *OMB Circular A-130* requires that agencies consider risk when

determining the need for and selecting computer-related control techniques (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

Joint Services Conference On Professional Ethics (JSCOPE) article:

<http://www.usafa.af.mil/jscope/JSCOPE99/Pollock99.html>

JSCOPE 99: <http://www.usafa.af.mil/jscope/#INFO99>

Financial Disclosure forms 450 and 278:

<http://www.usda.gov/ethics/forms/index.htm>.

Blessed are the young, for they shall inherit the national debt. (Herbert Hoover, in 3,500 *Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 68.)

Federal Supply Schedules (FSSs)

Contracts awarded by the General Services Administration (GSA) for government-wide use (similar to government-wide acquisition contracts). They include virtually all IT support requirements (systems engineering and technical assistance-type contracts) and much more. FSSs have competitive prices, are precompeted, and are very easy for agencies to use. The Federal Acquisition Streamlining Act greatly reduced restrictions on using them, and they have become one of the primary sources for IT acquisitions. On March 6, 1997, Eleanor Spector, the director of defense procurement, publicly urged the use of GSA's FSS contracts. When using these contracts, no request for proposal (RFP) is needed. Federal acquisition regulations do recommend competing at least two FSS bidders for other than micro purchases. But users need not (per FAR 8.4) document fair and reasonableness of the price, consider small business set-asides, seek further competition, or synopsise the requirement (in the *Commerce Business Daily*) (IRMC New World of the CIO Course).

General Services Administration: <http://pub.fss.gsa.gov>

Commerce Business Daily: <http://www.govcon.com/>.

A man travels the world over in search of what he needs and returns home to find it. (George Moore, in 3,500 *Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 249.)

Feedback (Cause and Effect, C&E Chain)

The way the customers or users view the organization's products or services as evidenced by the demand they make for its output and the satisfaction they display (IRMC Measuring Results of Organizational Performance Course). Generically, feedback is the information or loop connecting the output of a process with its input so as to regulate the process—as in cybernetics. Feedback is an integral portion of systems engineering. In electronics, feedback loops are built into processes to control them. They can alleviate unpredicted conditions that could "blow up" the process. For instance, in software, a variable could inadvertently fall to zero. If that variable were used as a divisor in an equation, the resulting number would be infinite—blowing up the process. Feedback is used to improve processes such as W. Edwards Deming's total quality management (TQM) for continuous process improvement. It is also used to compare

before (as-is) from after (to-be) conditions. Feedback is one of the primary features of metrics—it allows the owners of a process to evaluate and improve the process. In Japan, manufacturers use the “five whys” technique in which a problem is analyzed in order to “fix” it. But this is insufficient to obtain a “cause.” Therefore, the “cause” of the problem is then analyzed to find its “cause.” The question “why” is asked five times to obtain a causal chain. Once these factors are “fixed” the problem is considered “solved.” In actuality a causal chain can be of infinite length. But human processes are not infinite so five has been determined to be sufficient.

Kindness is a hard thing to give away. It usually comes back to you. (Jacob Braude, *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 202.)

Firewall—see Gateways <http://www.firewall.com> and <http://www.4firewalls.com>

A system designed to electronically protect a network from attack and misuse. Firewalls help to prevent unauthorized access including personnel and information. They can be out-of-the-box software packages hosted on servers or other devices. They must, however, be configured by the LAN administrator to satisfy the needs of the enterprise. Improperly configured firewalls can permit usage that can create system vulnerabilities. However, generally, the more restrictive the administrator makes the settings (more secure and less vulnerable), the longer the response times (delays for users). Firewalls are almost universally used by enterprises that connect to the Internet or external users. It is also recommended for individual users who have special connectivity into their systems (e.g., DSL).

All messages entering or leaving the network should pass through the firewall, which examines each message and blocks those that do not meet the specified security criteria. Enterprise system audits are recommended since individual users sometimes hook up direct outside connections to their computers, totally defeating the firewall and enterprise security policies, making the entire network vulnerable to attack. Firewalls come in several types of varying complexity, cost, and effectiveness. The choice of firewalls should be tailored to the needs of the enterprise. In addition, high value units or sub-networks may also be protected by additional firewalls. For increased protection, these internal (or enclave) firewalls should differ in type and manufacturer from the external firewall. Firewalls can be used to enforce an organization’s security policies and can efficiently log Internet activity. It should be noted that firewalls cannot protect against insider attacks or completely new threats. Coverage varies considerably, depending upon the type of firewall employed. See packet filtering and proxy server. @guard commercial personal firewall <http://www.atguard.com>; ConSeal PC firewall <http://www.signal9.com>.

Firewalls can block unwanted traffic, direct incoming traffic to more trustworthy internal systems, hide vulnerable systems that cannot easily be secured from the Internet, can log traffic to and from a private network, can hide information (e.g., system names, network topology, network device types, and internal user IDs from the Internet), and can provide more robust authentication than standard applications might be able to do. Firewall settings are a tradeoff between user transparency and network protection. Types

include: packet filtering, application, hybrid or complex (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

Cynicism is an unpleasant way of telling the truth. (*The Little Foxes*—a film, 1978.)

First Virtual (FV)

A method of electronic commerce in which a customer selects an item on the Internet and gives his or her FV number to the merchant; the merchant e-mails (or telnets) the request to FV; FV e-mails the customer to confirm the order; customer confirms (or not) to FV; if purchase is confirmed, FV bills to the customer's credit card.

[In answer to the question, "What would you do if you found a million dollars?"] I'd see if I could find the guy that lost it, and if he was poor, I'd give it back. (Yogi Berra, *The Yogi Book*, Workman Publications, New York, 1998, p. 59.)

Flow and High Performing Systems (HPS)

1) The continuous movement of knowledge, information, and data between and among nodes (people) in a network to (hopefully) enable effective achievement of organizational goals. In actuality, organizations generally have systems of both formal and informal information flow. The rumor mill is often faster than formal channels, but it rarely provides the context necessary to understand the content of the information (i.e., it primarily consists of information, not knowledge).

2) The psychological state achieved by an individual (or high-performing system) in which activities are naturally and spontaneously carried out seemingly without effort or conscious deliberation but with very high success and satisfaction for participants; the state of being "in the groove" or "in the zone." Individual aspects of flow have been explored by Csikszentmihalyi; high-performing systems have been explored by Peter Vaill of The George Washington University. Per Edward Edinger, Jungian psychology would identify the state of flow with an attunement along the ego-self axis.

It seems certain that there is an "optimal" level of activation for a given task to be performed by a given individual at a given time. It would appear also that for most individuals and for most tasks that optimal level is a moderate degree of activation, high enough to assure reasonable speed and alertness, and low enough not to present a hazard to the organization of responses. Therefore it would be expected that studies in which the degree of activation was the independent variable and the quality of performance was the dependent variable would yield results which, when plotted, would form an inverted U-shaped curve. (Mary-Louise von Franz, *Individuation in Fairytales*, Spring Publications, Dallas, TX, 1982, pp. 193-194.)

Peter Vaill is a student of "high-performing systems" ... Such systems behave, according to Vaill, as self-fulfilling prophecies ... "a private language and set of symbols ... they act in a new way ... Peak experiences ... lead members to enthuse, bubble, and communicate joy and exultation ... A Hall of fame phenomenon arises ... an air of invincibility leads to the same reality. (Thomas J. Peters and Robert H. Waterman, Jr., *In Search of Excellence*, Warner Books, New York, 1982, p. 264.)

Foreign Intelligence Surveillance Act (FISA) of 1978, October 25, 1978, P. L. 95-511; 50 U.S.C. §1801 et seq.

Used to obtain electronic surveillance and physical searches without warrants, but under court order, in cases of foreign intelligence, international terrorism, or sabotage activities by a foreign power or its agents. It requires a lower level of probable cause than Title III warrants against U.S. persons. It is also applicable under the Uniform Code of Military Justice and has survived numerous court challenges. Secretary and the Deputy Secretary of Defense certify to the Attorney General that the application to the Foreign Intelligence Surveillance Court conforms to this act; this applies to electronic surveillance as well as physical searches (IRMC Assuring the Information Infrastructure Course).

If you pity rogues you are no great friend to honest men. (Thomas Fuller, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983 p. 179.)

Four A's or 4 A's (Adaptability, Accountability, Alignment, and Awareness)

The four A's create a framework for judging the success of performance based management and for information management strategic planning. Expenditures should add value to at least one of the 4 A's in order for it to be justified (IRMC New World of the CIO Course). The four A's are designed to provide visibility and value to taxpayers:

Accountability: Visibility that an agency intends to provide and can demonstrate value for money.

One man with courage constitutes a majority. (General Colin Powell, USA.)

Alignment: Visibility that all agency components are working together to achieve the mission.

Failure does not exist. Failure is simply someone else's opinion of how a certain act should have been completed. (Wayne W. Dyer, *Your Erroneous Zones*, Avon Books, 1976, New York, p. 133.)

Adaptability: Visibility that an agency can be responsive in a changing world.

There is nothing so easy but that it becomes difficult when you do it reluctantly. (Terence Publius Terentius Afer, c.190-159 B.C., 1805 from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 108.)

Awareness: Visibility that an agency is aware of its environment (also described in IRMC Leadership for the 21st Century Course).

The Fates lead him who will; him who won't, they drag. (Seneca, quoted by Joseph Campbell, *Myths to Live By*, Bantam Books, New York, 1972, p. 125.)

Frame of Reference—see Framing

A type of rater error in which the rater rates a subject higher or lower than the actual performance indicated, because of the rater's personal bias or standards which aren't shared by the other raters (IRMC Measuring Results of Organizational Performance

Course). More generically, a frame of reference is the paradigm of assumptions, conclusions, and world-view held by a particular person at a particular time. The person relates various happenings to this set in evaluating them. The frame of reference can differ under varying environmental conditions and subject roles. Discriminatory biases can be a part of an individual's frame of reference.

We will teach you. For when we show you our ignorance, then you will see where we most need your wisdom. (Orson Scott Card, *Children of the Mind*, Tom Doherty Books, New York, 1996, p. 85.)

Framing—see Frame of Reference and Selective Perception

Framing is creating a contextual environment for a question, problem, or situation. Thus, if the present frame is not understood, one reframes the question. Framing is a basis for human communications and understanding and is essential for knowledge transfers. A frame has implicit or tacit features as well as communicated or explicit ones and the former can be impediments if not shared between the sender and receiver (participants). Thus, it is helpful if participants consider the unspoken assumptions, suppositions, interpretations, etc., inherent in their connotations of a frame of understanding. For example, words may have several meanings that might be applied to a particular situation. One person might, for instance, be referring to information flow while another is referring to the Csikszentmihalyi state of being in flow, causing miscommunication, misunderstanding, and (sometimes) a declining relationship. Normally, identifying a domain is a part of framing a problem or situation as is identifying a method or approach (e.g., clustering versus clumping). It has been said that identifying (framing) the problem is half the solution. Framing includes boundaries, reference points, yardsticks, and metaphors. A frame gives only a partial view and can eliminate important factors; it establishes the scope or field of view. A winning frame maximizes reality and minimizes complexity. It captures the essence of a situation (see RPD) and is robust. Alfred North Whitehead said, "Seek simplicity, then distrust it" (quoted by J. Edward Russo and Paul J. H. Schoemaker in *Decision Traps*, 1990). Alignment is matching one's frame to the frames of people he or she wants to influence (IRMC Leadership for the 21st Century Course).

People are virtually incapable of understanding and accepting any point of view other than their own. (C. G. Jung, *Psychological Types*, CW6, Princeton University Press, Princeton, NJ, 1971, p. 489.)

Freedom from Government Competition Act (FGCA)

Proposed act that failed to pass in 1996 and 1997. Would require government outsourcing of all noncore functions. Other similar proposed acts that failed to pass include: the Competition in Commercial Activities Act (H.R. 716) and Federal Activities Inventory Reform Act (S. 314) (IRMC Advanced Software Acquisition Management Course).

Nobody's rational ... we all act because we're sure of what we want, and we believe that the actions we perform will get us what we want, but we never know anything for sure, and so all our rationales are invented to justify what we were going to do anyway before we thought of any reasons. (Orson Scott Card, *Children of the Mind*, Tom Doherty Books, New York, 1996, p. 113.)

Freedom Of Information Act (FOIA) of 1966

5 U.S.C. 552 assumes executive branch information is accessible to the public and sets standards for releasing such information (IRMC New World of the CIO Course). See e-FOIA: <http://www.nist.gov/admin/foia/foia.htm>.

"Mantic" means a philosophy that comes from vision or inspiration or intuition rather than from scholarship or reason. (Orson Scott Card, *Children of the Mind*, Tom Doherty Books, New York, 1996, p. 82.)

Freeware

A program that is available to users at no cost. Such no-cost software may be considered as part of the public domain—available for anyone's use. Users must be sensitive to whether the software is actually free for public use rather than shareware or pirated copyrighted material. In addition to legal risks, such software has inherent technical and security risks. While it should certainly be checked with antivirus software, doing so does not ensure that the freeware does not contain hidden malware such as logic bombs or Trojan horses.

You have not lived a perfect day, even though you have earned your money, unless you have done something for someone who will never be able to repay you. (Jacob Braude, *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 362.)

Frequency

The reciprocal of the period of a signal. The number of cycles a particular signal completes in one second. It was formerly measured in cycles per second (cps), but is now measured equivalently in Hertz (Hz). One Hertz = one cycle per second. See period, bandwidth, and wavelength. Wireless IT applications utilize a portion of the industry, science, and medicine (ISM) band, allocated by the Federal Communications Commission (FCC). The portion so used is 2.4 to 2.4835 GHz (a 83.5-MHz band). Thus, the maximum bandwidth for such applications is 83.5 MHz or .0835 GHz. (MHz = megahertz = 1 million cps; GHz = gigahertz = 1 billion cps. In the United States, alternating current (AC) power (most wall sockets) provides a 60-Hz current. The higher the frequency, the more energy in the signal, but the shorter the propagation distance.

The most beautiful concepts, for being repeated too frequently and too smugly, lose their meaning, their vigor, their weight of silence. (Mendel of Kotzk, paraphrased by Elie Wiesel in *Souls on Fire*, Summit Books, New York, 1972, p. 237.)

Frequency-Division Multiplexing (FDM)

A scheme in which numerous signals are combined for transmission on a single communications line or channel. Each signal is assigned to a different frequency (sub channel) within the main channel (*Glossary of IM/IT & KM Terms*).

Precision of communication is important, more important than ever, in our era of hair-trigger balances, when a false or misunderstood word may create as much disaster as a sudden thoughtless act. (James Thurber, "Friends, Romans, Countrymen, Lend Me Your

Ear Muffs," *Lanterns and Lances*, 1961, from *The International Thesaurus of Quotations*, Rhoda Thomas Tripp, Harper & Row, New York, 1970, p. 93, entry 148, No. 15.)

Frequency Hopping Spread Spectrum (FHSS)

FHSS is one of two main methods of implementing spread spectrum processing (the other is direct sequence spread spectrum) to reduce interference in radio frequency (RF) signals (and make them more difficult to intercept). In spread spectrum, the frequency of the signal is split into portions (1 MHz channels) that are spread through the allowable bandwidth (for wireless IT, this is an 83.5 MHz band). With FHSS, channels are grouped into 79 noninterfering hopping sets. A hopping code determines the frequencies to be transmitted and their order. The transmitter and receiver must, therefore, have the same hopping code. A narrowband interfering signal can often be avoided by hopping to a different frequency. If such interference is detected, the FHSS will re-transmit on the new frequency. However, since wireless IT has only 1 watt of power (consider that the lamp by your bed may have a 100 watt bulb in it), there is a potential for interference from other devices operating in the same frequency band. Microwave ovens (many now have 1,000 watts of power) operate at the same frequency (2.4 GHz). Such devices must be kept at least 10 feet (3.5 meters) from any IT wireless devices to reduce the potential for interference. FHSS can achieve up to 2 Mbps data rates. See blue tooth and IEEE 802.11 for implementations of spread spectrum for IT wireless applications. Compared to DSSS, FHSS is more secure against eavesdropping; lower power, has higher data rates for multiple users, is more tolerant to wideband interference, is more resistant to microwaves, and costs less. However, it has shorter range, poorer voice quality, interferes with DSSS, and has lower data rates for individual users (IRMC Managing Networked Security in a Networked Environment Course).

You have to be careful if you don't know where you're going, 'cause you might not get there. (Yogi Berra, *The Yogi Book*, Workman Publications, New York, 1998, p. 102.)

Frequently Asked Questions (FAQs)

<http://support.microsoft.com/support/outlook/faq/ol98/default.asp>

A modern Internet term and a section on many Web sites dedicated to addressing questions asked by many users in order to obviate the need for individual questions/e-mails. See <http://www.dsmc.dsm.mil/pubs/pdf/pmpdf01/so-pol.pdf> for my article on KM FAQs.

It is as important to learn the important questions as it is the important answers. It is especially important to learn the questions to which there may never be good answers. We have to learn to live with questions. (Chaim Potok, *In the Beginning*, Fawcett Crest, New York, 1975, p. 285.)

Information Security FAQs: <http://www.ytcif.telstra.com.au/info/security.html>.

Fuzzy Logic

A technique developed by L. Zadeh ("Fuzzy Logic, Neural Networks, and Self Computing," *Communication of the ACM* [Association of Computing Machinery], March 1994). dealing with uncertainty or partial information by simulating human reasoning. It

allows computers to behave without the logic and precision usually associated with computers. It is characteristic of humans and some artificial intelligence systems. It may be integrated into decision making systems such as DSS. For example, an international investment company used fuzzy logic with an expert system, a neural network, etc. to forecast returns from stocks. The system includes adjustments for anticipated changes in foreign exchange rates, interest rates, and other variables. Use of fuzzy logic allows insertion of probabilities into the "equation." Turban, McLean, and Wetherbe include an architectural diagram of this system. (Efraim Turban, Ephraim McLean, and James Wetherbe, *Information Technology for Management*, John Wiley & Sons, NY, 1999, pages 497-8 and G-4). Fuzzy logic's relation to usual computer logic parallels that of linear algebra's inequations (relationships where greater than or less than etc. replace the equals sign) to normal algebraic equations.

<http://ai.iit.nrc.ca/subjects/Fuzzy.html>; <http://ai.iit.nrc.ca/fuzzy/shower/title.html>.

There is no nonsense so gross that society will not, at some time, make a doctrine out of it and defend it with every weapon on communal stupidity. (Robertson Davies, *The Cunning Man*, Viking Penguin, New York, 1994, p. 390.)

G

Gateway—see Firewalls

Entries to or connections between two or more networks. Gateways may be used to connect physical, logical, or virtual networks and services. In the U.S. Navy, the IT for the 21st Century (IT-21) program applies to ships at sea. The Navy/Marine Corps Intranet applies to shore facilities. The two systems communicate through gateways. Gateway is also the name of a computer manufacturer.

Packet-filtering gateways use routers with packet filtering rules to grant/deny access based on source address, destination address, and port. They provide low security at low cost—are useful in low-risk environments. They are fast, flexible, and transparent, but filtering rules are not easily changed. They do not protect against IP or DNS address spoofing. If the gateway is breached, all networks hosts have been compromised. They provide little useful logging and often do not support strong user authentication.

Application gateways use server programs (proxies) that run on the firewall. Proxies take, examine, and forward external requests (if legitimate) to the internal host. They can support user authentication and logging. They are “the most secure type of firewall” (according to Microsoft) and are advantageous for medium-high risk sites. The firewall can be configured to be the only host address visible outside the network (all connection to/from internal network must then go through the firewall); proxies prevent direct access to internal services (protecting the internal network); and can provide detailed logging and strong authentication.

Hybrid or complex gateways combine two or more types of firewalls and implement them in series (not in parallel), enhancing security. They are useful in medium-high risk implementations (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

As geographers, Sosius, crowd into the edges of their maps parts of the world which they do not know about, adding notes in the margin to the effect that beyond this lies nothing but sandy deserts full of wild beasts, and unapproachable bogs. (Plutarch [46–120 A.D.], *Lives, Aemilius Paulus*, Section 5, quoted in *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 136a.)

Generalized Reciprocity—see Knowledge Brokering

There is a hierarchy to dyadic human relationships. Knowledge brokering is an intermediate level of relationship wherein the people involved track (explicitly or implicitly) their helping actions towards each other to maintain a balance between them. We’ve all heard or said, “I owe you one” or “you owe me” or “one hand washes the other.” In generalized reciprocity, however, there is no tracking. The relationship has expanded so that the general pleasure of helping or assisting your friend or co-worker is payment enough. You can rely on their help when you need it, and they can rely upon yours. You don’t keep score. The reciprocity has become generalized, more of a feeling than a thought. Such a situation is more conducive to flow, especially in a high-performing system. For most people, it tends, however, to be limited to an individual or

limited set of individuals (a group). However, for some individuals (e.g., Mahatma Gandhi) the group can be quite extensive—even including all of humanity, all animal life, or all living things. Thus, it can become a spiritual phenomenon when extrapolated.

When you tell your trouble to your neighbor you present him with a part of your heart. If he possesses a great soul, he thanks you; if he possesses a small one, he belittles you. (Kahlil Gibran, *The Wisdom of Gibran*, Philosophical Library, New York, 1966, p. 71.)

The good befriend themselves. (Sophocles, *Oedipus at Colonus*, 1309, *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 83a.)

If you confer a benefit, never remember it; if you receive one, never forget it. (Chilon, quoted by Jacob M. Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 152.)

Generally Applicable and Accepted (GAA)

An IT principle explicitly similar to generally accepted accounting principles (GAAP) (*CobIT Executive Summary*, July 2000, 3rd ed.), (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

Pygmies placed on the shoulders of giants see more than the giants themselves. (Lucan [39–65 A.D.], *The Civil War*, book II, 10 [Didacus Stella] from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 134.)

General Packet Radio Service (GPRS)

A standard for wireless communications which runs at speeds up to 150 kilobits per second, compared with current GSM (global system for mobile communications) systems' 9.6 kilobits. GPRS, which supports a wide range of bandwidths, is an efficient use of limited bandwidth and is particularly suited for sending and receiving small bursts of data, such as e-mail and Web browsing, as well as large volumes of data (*Glossary of IM/IT & KM Terms*).

The amount of noise that anyone can bear undisturbed stands in inverse proportion to his mental capacity. (Arthur Schopenhauer, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 338.)

General Systems Theory (GST)—see Systems Engineering, Management, and Thinking

The theory developed by L. von Bertalanffy that observes similar algorithms and processes across diverse domains and disciplines. It includes, but is not equivalent to cybernetics (the science of feedback mechanisms). See von Bertalanffy's *General Systems Theory*, Braziller, New York, 1968.

When we intellectually reproduce experiences that by their nature belong to other dimensions, we are doing something similar to what the painter does when he represents three-dimensional spaces on a two-dimensional surface ... The laws of this perspective are essentially similar to the laws of logic: Both sacrifice the qualities of a higher dimension by arbitrarily limiting themselves to a particular point of view, so that their objects are always seen only from one side and in a foreshortening and proportion appropriate to the angle of vision. But whereas the painter consciously transfers his impressions from one dimension to

another and has no intention of imitating or reproducing an objective reality, but rather wishes to express his *reaction* to that reality, the thinker generally falls into the trap of supposing he has grasped reality with his own thinking, because he mistakes the "foreshortening" perspective of his one-sided logic for universal law. The use of logic for the process of thinking is undoubtedly just as necessary and justified as the use of perspective in painting, but only as a means of expression and not as a criterion of reality. (Lama Anagorika Govinda, *A Living Buddhism for the West*, Shambhala Boston, 1990, pp. 32-33.)

Genetic Algorithms (GA)

The newest type of artificial intelligence. GAs grow or evolve solutions to difficult one-of-a-kind problems such as scheduling, routing, designing. They are useful in project management and manufacturing. Often the possible answers are extremely large or infinite. They are based on genetics. GAs generate many (a herd of) problem solutions which are then graded on fitness. Least fit members of the "herd" are eliminated. The remainder are paired up, matched, and split to create a new herd of hybrids. A few are mutated to create diversity. This process is repeated until an optimal or acceptable solution is found. The most difficult part of implementation is representing solutions in the form of chromosomes. Then a fitness function must be developed. General Electric uses GA to design jet engines; law enforcement agencies use them to create pictures of muggers, financial firms use them to develop optimal trading strategies, project managers at John Deere and Volvo use them to develop optimal crashing strategies and scheduling. See <http://www.wardsystems.com> and <http://www.palisades.com> (IRMC New World of the CIO Course). "Optimization techniques that use processes such as genetic combination, mutation, and natural selection in a design based on the concepts of natural evolution," from "An Introduction to Data Mining: Pilot Software Data Mining White Paper" http://www.pilotsw.com/solutions/business_pas.htm (IRMC Data Management Strategies and Technologies Course). <http://ai.iit.nrc.ca/subjects/Evolutionary.html> genetic algorithms; <http://www.wardsystems.com/> <http://www.palisade.com/> (IRMC Critical Information Systems Technologies Course).

Conclusions arrived at through reasoning had very little or no influence in altering the course of our lives. Hence, the countless examples of people who have the clearest convictions and yet act diametrically against them time and time again; and have as the only explanation for their behavior the idea that to err is human. (Carlos Castaneda, *The Fire From Within*, Simon & Schuster, New York, 1984, p. 49.)

Geographic Information System (GIS)

A computer system capable of assembling, storing, manipulating, and displaying geographically referenced information, i.e., data identified according to their locations. Practitioners also regard the total GIS as including operating personnel and the data that go into the system (U.S. Geographic Survey, http://www.gsd.harvard.edu/~pbcote/GIS/web_resources.html).

This is the transcript of the ACTUAL radio conversation of a U.S. naval ship with Canadian authorities off the coast of Newfoundland in October 1995. Radio conversation released by the Chief of Naval Operations 10-10-95.

Canadians: Please divert your course 15 degrees to the South to avoid a collision.
Americans: Recommend you divert your course 15 degrees to the North to avoid a collision.

Canadians: Negative. You will have to divert your course 15 degrees to the South to avoid a collision.

Americans: This is the Captain of a U.S. Navy ship. I say again, divert YOUR course.

Canadians: No. I say again, you divert YOUR course.

Americans: This is the aircraft carrier USS——the second largest ship in the United States' Atlantic fleet. We are accompanied by three destroyers, three cruisers, and numerous support vessels. Demand that you change your course 15 degrees North, I say again, that's one five degrees North, or counter-measures will be undertaken to ensure the safety of this ship.

Canadians: This is a lighthouse. Your call!

[Received via Internet e-mail; this is an Urban Legend. See <http://www.snopes2.com/> for this myth].

Gigabits per second (Gbps)

One billion or 10⁹ bits/second. It is used as a measure of bandwidth on a digital data transmission medium such as optical fiber. With slower media and protocols, bandwidth may be in the Mbps (millions of bits or megabits or 10⁶ bits/second) or the kbps (thousands of bits or kilobits or 10³ bits/second) range. In future, transmission speeds of Tbps (trillions or terabits or 10¹² bits/second) will probably be achieved.

Everything comes to he who hustles while he waits. (Thomas A. Edison, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 173.)

Global Information Grid (GIG) or Global Information Infrastructure (GII)

The globally interconnected, end-to-end set of information capabilities, associated processes and personnel for collecting, processing, storing, disseminating, and managing information on demand to warfighters, policy makers, and support personnel (*Glossary of IM/IT & KM Terms*). The GIG is basically a renaming of the defense information infrastructure (DII). It is not a centrally controlled entity but rather a term used to encompass the immensity of connected systems—to a large degree, through the Internet. The Navy/Marine Corps Intranet will become a major portion of the GIG once it has been successfully implemented. See Ken Alford's "DoD and the Global Information Infrastructure" (*Crosstalk*, 1995, Vol. 8, No. 8, pp. 7-9) and Lodge and Reavis' *Global Friction Among Information Infrastructures* (Harvard Business School Publishing, Boston, 1999, HBS 9-799-152) (IRMC Assuring the Information Infrastructure Course). GIG is the successor to the Global Networked Information Enterprise (GNIE) (IRMC Advanced Software Acquisition Management Course).

Thanks to the interstate highway system, it is now possible to travel across the country from coast to coast without seeing anything. (Charles Kuralt, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 341.)

Global System for Mobile Communications (GSM)—see Enhanced Data GSM Environment and General Packet Radio Service

A wireless protocol developed in Europe in the 1980s. It is based on the time-division multiple access (TDMA) process; divides AMPS (analog mobile phone service) into 8 channels/time slots; is dual band; operates at 900/1,900 MHz; and has a 9.6 Kbps data rate (IRMC Managing Networked Security in a Networked Environment Course). Yahoo and CellPoint have created the find-a-friend system so that GSM/WAP users can find the physical location of other subscribers. Participants must explicitly consent, can selectively disable the function, and are “beeped” when located. However, there are still ethical and social considerations since disabling the function may force an explanation. Thus, it could be used to track spouses, employees (illegal in some places), children, customers, suppliers, etc. This may be interpreted as an invasion of privacy and may violate present or proposed European standards in this area (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

Wise men talk because they have something to say, fools because they have to say something. (Plato, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 186.)

Glueware—see **Middleware, Bolt-ons, and Enterprise Application Integration**

Any of several types of software that glues together other pieces of software. This includes middleware, bridges, wrappers, etc. Generally they are types of third-party software that integrates functions by trapping output from one component and reformatting it for input to another, sending notification messages about one tool's completion to another for start-up and so forth. Wrappers are often point-to-point solutions so that new versions of contractor off-the-shelf or function software necessitate changes to the wrappers or glueware (IRMC Advanced Software Acquisition Management Course).

Never underestimate a man who overestimates himself. (Franklin D. Roosevelt, referring to General Douglas MacArthur, USA, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 493.)

Gnutella—see Peer-to-Peer (P2P)

A file-sharing system on the Internet that searches for software and documents on the GnutellaNet, a loose federation of users and organizations that make a wide variety of information available to the world at large. Software for Windows, Mac, Linux/UNIX and BeOS turns your machine into a search client so you can access the GnutellaNet, as well as a server for offering files to others. In order to do a search, one must connect to one or more computers on the network directly by Internet protocol address, which in turn connect to other computers within a limited domain of about 10,000 hosts, known as a “horizon” (based upon *Glossary of IM/IT & KM Terms*). Similar to Napster, Gnutella uses a P2P technique and has the same significant security risks and vulnerabilities.

<http://www.geocities.com/damncreature/osmsoftware-gnutella.html>.

In America, the young are always ready to give to those who are older than themselves the full benefit of their inexperience. (Oscar Wilde, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 328.)

Googling

To "google" someone is to look up a person on Google to find out about him or her. The press began to enjoy writing about the prevalence of young professionals "googling" each other before a first date. The word also started being used more generally to mean "to use a search engine on the Internet" ("Google becomes the hot Web thing," Jeremy Schlosberg, *Media Life Magazine*, May 2001, http://www.medialifemagazine.com/news2001/may01/may28/5_fri/news5friday.html).

Cherish forever what makes you unique, 'cuz you're really a yawn if it goes. (Bette Midler, quoted by Noah ben Shea in *Great Jewish Quotes*, Ballantine, New York, 1993.)

Government Information Security Reform Act (GISRA) of 2000

Agencies are to maintain a program to adequately secure computer systems; ensure policies are founded on a continuous risk management cycle; implement controls that adequately assess information security risks; promote continuing awareness of information security risks; continually monitor and evaluate information security policy; control effectiveness of information security practices. The agency head is held responsible for compliance; the act covers agency and contractor systems; the Inspector General submits security reports to Office of Management and Budget; five security levels categorize agency program assessments (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

Department of Defense Inspector General:
<http://www.dodig.osd.mil/pubs/index.html>.

Today, if you invent a better mousetrap, the government comes along with a better mouse. (Ronald Reagan, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 208.)

Government Management and Reform Act (GMRA)—see <http://users.erols.com/jjjjams/00000037.htm> (IRMC Measuring Results of Organizational Performance Course).

The job of a manager is not to do everything—it is to make sure that every task gets done. (Michael Levine, "Winning Words of Wisdom," *Bottom Line Personal*, 1996, Vol. 17, No. 10 [May 15], p. 12.)

Government Paperwork Elimination Act (GPEA) of October 1998

Under GPEA, agencies must provide for optional use or acceptance of elex documents, signatures, and electronic record keeping when practicable. It is intended to increase citizens' ability to interact electronically with the federal government. It provides legal validity of electronic signatures. Agencies had to submit implementing plans by October 31, 2000. By October 21, 2003, all agencies are required to have elex filing and signature capabilities in place. An example is the Veterans On Line Applications (VONAPP) project,

where veterans can apply for compensation, pension, and vocational rehabilitation benefits and send completed applications electronically to their local Veterans Administration office, <http://vabenefits.vba.va.gov/vonapp> (Leadership for the New Millennium: Delivering On Digital Progress and Prosperity, 3rd annual report of the U.S. Government Working Group on Electronic Commerce, January 16, 2001). However, the IRS is exempt (IRMC Advanced Information System Acquisition Course). While government agencies are evolving rapidly,¹⁰ they are significantly challenged by such legislation as the Government Paperwork Elimination Act,¹¹ the Clinger-Cohen Act of 1996,¹² and OMB Memorandum M-00-10,¹³ which addresses electronic benefit and funds transfers, transactions that result in financial or legal liability (e.g., procurement contracts) (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course author's final paper, PKI Vulnerabilities).

Tradition: a clock which tells what time it was. (Elbert Hubbard, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 248.)

Government Performance and Results Act (GPRA), P. L. 103-62 of August 1993—see Performance- and Results-Based Management and Strategic Planning
<http://ombwatch.org/gpra/text/gpratext.html>

GPRA had four parts: strategic plans, annual performance plans, past year performance reports, and management flexibility projects. The last provides a means for executive agencies to request relief from legislative requirements based upon demonstrating economies of scale and efficiencies would be achieved thereby. The strategic (5-year, revised every 3 years) plans are submitted to Congress through OMB and GAO. Agencies had much difficulty complying with this requirement:
<http://www.govexec.com/dailyfed/0599/051899k1.htm>. Of prime importance is the differentiation between outputs and outcomes. The former are internal process measures, the latter are mission effectiveness measures (IRMC New World of the CIO Course). See also Chief Financial Officers Council's GPRA Implementation Committee's *Integrating Performance Measurement into the Budget Process* (January 12, 1997) and *Implementation of the GPRA: "A Report on the CFO's Role and Other Critical Issues Critical to the Government-wide Success of GPRA,"* (*Resources Management*, 1996); Department of Justice's *GPRA: DOJ Manager's Handbook on Developing Useful Performance Indicators* (version 1.1, April 1995); National Academy of Public Administration's *Towards Useful Performance Measurement: Lessons Learned from Initial Pilot Performance Plans Prepared Under the GPRA* (November 1994); Kravchuk and Schack's "Designing Effective Performance Measurement Systems under the GPRA of 1993" (*Public Administration Review*, July-August 1996); J. Mihm's "GPRA and the New Dialog" (*Public Manager*, Winter 1995-1996); and GAO's *Agency Performance Plans: Examples of Practices that Can Improve Usefulness to Decision Makers* (GAO/GGD/AIMD-99-69, February 1999); <http://freedom.house.gov/results/>. House Majority Leader site with links/grades; related GAO reports: <http://www.gao.gov/> and see GAO/GGD/AIMD-99-215 of July 1999 *Managing for Results: Opportunities for Continued Improvements in Agencies' Performance Plans* and the Defense Information Systems Agency's *Performance Planning Guidance for Fiscal Year 1998* (IRMC Measuring Results of Organizational Performance Course). Defense Business

Management University interactive course (DISA *Performance Planning Guidance for Fiscal Year 1998*, p. G-3). See Beryl Radin's "The GPRA: Hydra-Headed Monster or Flexible Management Tool?" (*Public Administration Review*, July-August 1988, Vol. 58, No. 4, pp. 307-316; *Balancing Measures: Best Practices in Performance Management* (August 1999, NPRG, <http://govinfo.library.unt.edu/npr/library/papers/bkgrd/balmeasure.html> p. 61) (IRMC Measuring Results of Organizational Performance Course). See *Guide for Developing and Using IT Performance Measurements*, version 1.0, DON CIO, 10/01, POC is David Carder, 703-601-0230. <http://www.opm.gov/gpra/GPRAresources.htm> May 2002, useful information is available on OPM's GPRA Resource Center Web site: <http://govinfo.library.unt.edu/npr/library/studies.html>.

From Gary Hacker's *HR Metrics News* consolidated from Issues 1-5 (OPM):

Executive Branch Management Scorecard: <http://www.whitehouse.gov/omb/memoranda/m02-02.html> 3/02. OMB memo of October 30, 2001, announces the development of an Executive Branch Management Scorecard.

The President's Management Agenda: <http://www.whitehouse.gov/omb/budget/fy2002/mgmt.pdf> 5/02. President Bush's strategy for improving the management and performance of the federal government.

Executive Management Scorecard—2001 Baseline Evaluation: <http://www.govexec.com/dailyfed/0202/020402ts1chart.htm> 5/02. Chart showing how agencies scored on 5 key categories of management—2001 baseline evaluation conducted by OMB—from GovExec.com.

OMB Budget and Performance Integration Plans: <http://www.whitehouse.gov/omb/memoranda/m02-06.pdf> 6/02. OMB memo of April 24, 2002, providing guidance in support of President Bush's budget and performance integration management initiative. Contains attachment describing uniform evaluation metrics or "common measures."

3rd Annual Performance Report Scorecard: Which Federal Agencies Inform the Public?: <http://www.governmentaccountability.org/scorecard2001.htm> 6/02; <http://www.governmentaccountability.org/tableone2001.htm> 6/02. "The American people are entitled to know what benefits they have received from their government's activities, and annual performance reports are one avenue for agencies to communicate this information to citizens and policymakers. The purpose of this scorecard is to encourage improvement in the quality of reporting on results achieved by government agencies."

The course is hidden, but the result is well known. (Ovid [Publius Ovidius Naso], 43 B.C.-18 A.D., *Ars Amatoria* IV, 287, from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 128.)

Government-Wide Acquisition Contract (GWAC)

Government contracts originally competed intended to be used (ridden) by other government entities at a later date. These buyers need not let their own contracts but merely write tasks against the existing GWAC. The government entity awarding the GWAC collects a fee from the user (a negotiable percentage of the funding used—usually on a sliding scale based upon quantity). GWACs are similar in operation to basic ordering agreements (BOAs) and blanket purchasing agreements (BPAs) except that they are intended from the start for use by other government agencies—not within a particular office or agency. For instance, an Air Force office could obtain IT services through the Department of Agriculture. The General Services Administration (GSA) has established a number of IT vehicles for use by other government agencies (e.g., their Millennialite contract). These are not considered GWACs, but they operate in much the same way.

Better one's own duty, imperfect, than another's duty well performed. (*Bhagavad Gita*, trans. F. Edgerton, 3,35 and 18,47, from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 106b.)

Graphical User Interface (GUI)

A program interface that takes advantage of the computer's graphics capabilities to make the program easier to use. Well-designed graphical user interfaces can free the user from learning complex command languages (*Glossary of IM/IT & KM Terms*).

The world is governed more by appearance than by realities, so that it is fully necessary to seem to know something as to know it. (Daniel Webster. *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 264.)

Groupware

A class of software that helps groups of colleagues (*workgroups*) attached to a local-area network organize their activities. Typically, groupware supports the following operations: Groupware is sometimes called *workgroup productivity software*. Team groupware is a category of software that enables colleagues, especially geographically dispersed colleagues, to collaborate on projects. Typically, team groupware uses the Internet and the World Wide Web to facilitate communication among the team (<http://www.webopedia.com/>). For example, the Information Resources Management College has a groupware room used for brainstorming and group decision making. It provides anonymity (useful with the Delphi technique) and allows participants to view the contributions of others in real time and for all to vote on various options. The PEO for Space, Communications, and Sensors created an international VTC network that included computers attached at various units on the system. Users could simultaneously view and modify a shared file in real time.

If all economists were laid end to end, they would not reach a conclusion. (George Bernard Shaw, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 79.)

H

Hackers—see Information Warfare

Unauthorized individuals who surreptitiously enter or “hack” into someone else’s network or computer system. Originally, hackers were not malicious and only wished to succeed in breaking in where they were not wanted—as a challenge. The term “cracker” has now come into vogue to differentiate hackers who are malicious in intent from the original hackers since common usage still lumps them together and refers to anyone breaking in as “hackers.” Thus, cyber terrorists would be crackers, not hackers. Happy Hacker: <http://www.happyhacker.org/> Jeanie Knonstantinou’s “Computer Hackers: Invasion of Computer Systems” final paper for *Computers and Law* (University at Buffalo School of Law, December 8, 1995), white hat hacker tool L0phtCrack. Back Orifice 2000 ntbugtraq.ntadvice.com/default.asp?sid=1&pid=47&aid=45.

Twenty percent of the traffic on the Internet is trolling—looking for weaknesses in networks and systems (CERIAS *Security Visionary Roundtable Call to Action*, version 1.0, p. 22); Accenture (formerly Anderson Consulting) and The Center for Education and Research in Information Assurance and Security (CERIAS) at Purdue University, 2001 (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

Boys throw stones at frogs in sport. But the frogs do not die in sport, they die in earnest. (Plutarch, quoted by P. D. James, in *Death of an Expert Witness*, Charles Scribner's Sons, New York, 1977, p. 190.)

Phrack underground hacker magazine: <http://www.phrack.org/>
Phrack's links to other “Cool” sites: <http://www.fc.net/phrack/other.html>
Hack history: <http://www.attrition.org/mirror/attrition/index.html>.

Hacktivists

Crackers who attack computer systems to promote political causes or to wage protest campaigns in cyberspace by posting messages on targeted Web sites—often national governments.

The healthy progress of humanity depends on our getting away from any and all unrealistic mental images of the world in which we live. (Elliott Jaques, *Creativity and Work*, International Universities Press, Inc., Madison, CT, 1990, p. 6.)

Halo

A type of rater error in which the rater has an overall impression of the subject and that impression overrides scoring of individual items (IRMC Measuring Results of Organizational Performance Course). The halo effect is a pitfall in many types of rating systems such as competitive proposal evaluations (impression of a bidder is good or not for a specific rater, possibly due to limited but strong prior exposure); personnel selection for hiring; personnel evaluations (first impressions tend to be overly valued); and numerous others. The halo effect is not necessarily limited to individuals but can affect small groups as well.

As Karl Weick points out, people "tend to be more interested in confirming rather than rebutting or contradicting" their expectations. (Don Cohen and Laurence Prusak, *In Good Company*, Harvard Business School Press, Boston, 2001, p. 44; quoting *Sensemaking in Organizations*, Sage Pubs, Thousand Oaks, CA, 1995, p. 145.)

Handshaking Procedures

Dialogue between two information systems for synchronizing, identifying, and authenticating themselves to one another (*Glossary of IM/IT & KM Terms*). Such procedures take place between modems (e.g., offsite users) and the LAN (via a firewall), or between a user's browser and a Web site or portal. Establishing an interface connection between any two electronic entities involves handshaking that depends upon common protocols between the connecting systems.

A good marriage is like a good handshake—there is no upper hand. (Jacob Braude, *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 227.)

Hash—see Encryption and PKI

An algorithm used in the public key infrastructure that condenses a message into a standard number of bits. The resulting "message digest" is then encrypted (signed) by the sender's private key. The recipient decrypts the message digest with the sender's public key. This prevents the message digest from being changed without detection, since only the sender has the key used to encrypt it. Since the message maps onto the message digest, any change to the message itself will be made obvious since it will not then correspond to the unchanged message digest. Thus, any message tampering will be automatically detected.

If the world were perfect, it wouldn't be. (Yogi Berra, *The Yogi Book*, Workman Publications, New York, 1998, p. 52.)

Hate Crimes Legislation S.B. 390

Hate Crimes Legislation has been proposed but defeated by state and federal governments so far. The best chance for the bill was the DoD Authorization Bill in October 2000, but it was stripped from that bill.

The Senate Bill 622 was sponsored by Senator Ted Kennedy in March 1999, and redefined the existing 1969 law, by adding gender, disability, and sexual orientation as protected classifications.

An Incredible Speech For Hate Crimes Legislation from a Conservative White Republican from Rural Georgia. Remarks on S.B. 390, Hate Crimes Legislation, by Rep. Dan Ponder, Thursday, March 16, 2000 [made from the well of the Georgia House of Representatives]: "Thank you, Mr. Speaker, Ladies and Gentlemen of the House. I am probably the last person, the most unlikely person that you would expect to be speaking from the well about hate crime legislation. And I am going to talk about it a little differently from a lot of the conversations that have gone on thus far. I want to talk about it a little more personally, about how I came to believe what I believe.

"About two weeks ago my family got together for my father's 70th birthday. It was the first time since my oldest daughter was born 19 years ago that only the children and spouses got together, no grandchildren. We stayed up until 2 o'clock in the morning talking about hate crime legislation, this very bill. Even my family could not come to a resolution about this bill, but we did agree that how you were raised and who we are would likely influence how you would vote on this bill. So I want you to know a little bit about me, and how I came to believe what I believe.

"I am a White Republican, who lives in the very Southwest corner of the most ultraconservative part of this state. I grew up there. I have agricultural roots. I grew up hunting and fishing. I had guns when I was a kid. On my 12th birthday I was given that thing that so many southern boys receive, that shotgun from my dad that somehow marked me as a man. I was raised in a conservative Baptist church. I went to a large, mostly white Southern university. I lived in and was the president of the largest, totally white fraternity on that campus. I had nine separate great-great-great grandfathers that fought for the Confederacy. I don't have a single ancestor on all of my family lines that lived north of the Mason-Dixon line going back to the Revolutionary War. And it is not something that I am terribly proud of, but it is just part of my heritage, that not one, but several of those lines actually owned slaves.

"So you would guess just by listening to my background that I am going to stand up here and talk against hate crime legislation. But you see, that's the problem when you start stereotyping people by who they are and where they came from, because I totally, totally support this bill. I come from a privileged background, but hate has no discrimination when it picks its victims. I have a Catholic brother-in-law. My sister could not be married in their church, and his priest refused to marry them because they were of different faiths. I have a Jewish brother-in-law. The difference in that religion has caused part of my family to be estranged from each other for over 25 years. I was the president of the largest fraternity at Auburn University, which won an award while I was there as the best chapter in the country. Out of over 100 members, 6 of those are now openly gay. But the "lasting bond of brotherhood" that we pledged ourselves to during those idealistic days apparently doesn't apply if you should later come out and declare yourself gay.

"Some of you know that my family had an exchange student from Kosovo that lived with us for six months, during the entire time of the fighting over there. When we last heard from her, her entire extended family of 26 members had not been heard from. Not one of them. They had all been killed or disappeared because of religious and ethnic differences that we cannot even begin to understand. My best friend in high school and college roommate's parents were raised in Denmark during the war. His grandfather was killed serving in the Resistance. For three years, that family survived because people left food on their doorstep during the middle of the night. They couldn't afford to openly give them food because they would then be killed themselves.

"And to Representative McKinney, we are probably as different as two people can be in this House based on our backgrounds. But I myself have also known fear, because I am a white man that was mugged and robbed in Chicago in a black neighborhood. And you are right. It is a terror that never goes away. It doesn't end when the wounds heal or the dollars are replaced in your wallet. It is something that you live with the rest of your life. But I want to tell you the real reason that I am standing here today. And this is personal, and in my five years in this House I have never abused my time in the well, and I only have 2 days before I leave this body, so I hope that you will just listen to this part for me.

"There was one woman in my life that made a huge difference and her name was Mary Ward. She began working for my family before I was born. She was a young black woman whose own grandmother raised my mother. Mary, or May-Mar as I called her, came every morning before I was awake to cook breakfast so it would be on the table. She cooked our lunch. She washed our clothes. But she was much more than that. She read books to me. When I was playing Little League she would go out and catch ball with me. She was never, ever afraid to discipline me or spank me. She expected the absolute best out of me, perhaps,

and I am sure, even more than she did her own children. She would even travel with my family when we would go to our house in Florida during the summer, just as her own grandmother had done. One day, when I was about 12 or 13 I was leaving for school. As I was walking out the door she turned to kiss me good-bye. And for some reason, I turned my head. She stopped me and she looked into my eyes with a look that absolutely burns in my memory right now and she said, "You didn't kiss me because I am black." At that instant, I knew that she was right. I denied it. I made some lame excuse about it. But I was forced at that age to confront a small dark part of myself. I don't even know where it came from. This lady, who was devoting her whole life to me and my brother and sister, who loved me unconditionally, who had changed my diapers and fed me, and who was truly my second mother, that somehow she wasn't worthy of a good-bye kiss simply because of the color of her skin.

"Hate is all around us. It takes shape and form in ways that are somehow so small that we don't even recognize them to begin with, until they somehow become acceptable to us. It is up to us, as parents and leaders in our communities, to take a stand and to say loudly and clearly that this is just not acceptable. I have lived with the shame and memory of my betrayal Mary Ward's love for me. I pledged to myself then and I re-pledged to myself the day I buried her that never, ever again would I look in the mirror and know that I had kept silent, and let hate or prejudice or indifference negatively impact a person's life; even if I didn't know them. Likewise, my wife and I promised to each other on the day that our oldest daughter was born that we would raise our children to be tolerant. That we would raise them to accept diversity and to celebrate it. In our home, someone's difference would never be a reason for injustice.

"When we take a stand, it can slowly make a difference. When I was a child, my father's plants had a lot of whites and a lot of blacks working in them. We had separate water fountains. We had separate tables that we ate at. Now my daughter is completing her first year at Agnes Scott College. She informed me last week that she and her roommate, who happens to be black, they were thrown together just randomly last year as first year students, had decided that they were going to room together again next year. I asked her the reasons that they had decided to live together again. She said, "Well, we just get along so well together." She mentioned a couple of other reasons, but do you know what was absent? Color. She just didn't think about it. You can make progress when you take a stand. Our exchange student, who grew up in a country where your differences absolutely defined everything about you, now lives in Dallas where a whole community of different races has embraced her and is teaching her how to accept people who are different from her and who love her.

"To those that would say that this bill is creating a special class of citizen, I would say ... Who would choose to be a class of citizen or who would choose to be gay and risk the alienation of your own family and friends and coworkers? Who would choose to be Jewish, so that they could endure the kind of hatred over the years that led to the Holocaust and the near extinction of the Jewish people on an entire continent? Who would choose to be black simply so that their places of worship could be burned down or so that they could spend all their days at the back of the line? We are who we are because God alone chose to make us that way. The burdens that we bear and the problems that we are trying to correct with this legislation are the result of man's inhumanity to man. That is hardly trying to create a special class of people.

"To those that would say that we already have laws to take care of these crimes, I would say watch the repeats of yesterday's debate on the lawmakers. We made passionate pleas on behalf of animal rights. We talked with revulsion about cats being wired together with barbed wire. Surely, surely, Matthew Sheppard's being beaten and hung up on a barbed wire fence and left to die is no less revolting. Surely our fellow man deserves no less than our pets.

"Hate crimes are different. When I was a teenager, on more than one water tank, I painted 'Sr's of '72.' Surely no one in here is going to tell me that the words that are painted

on walls that say 'Kill the Jews' or a swastika or 'Fags must die' or 'Move the Niggers' are somehow the same as 'Sr's of '72.' Even today, those very words make us feel uncomfortable and they should. Surely we are not going to equate a barroom brawl or a crime of passion with a group that decides, with purpose, to get in a car and go beat up blacks or gays or Jews without even knowing who they are.

"Hate crimes are about sending a message. The cross that was burned in a black person's yard not so many years ago was a message to black people. The gay person that is bashed walking down the sidewalk in midtown is a message to gay people. And the Jews that have endured thousands of years of persecution were all being sent messages over and over again. I would say to you that now is our turn to send a message. I am not a lawyer; I don't know how difficult it would be to prosecute this or even care. I don't really care that anyone is ever prosecuted under this bill. But, I do care that we take this moment in time, in history, to say that we are going to send a message. The pope is now sending a message of reconciliation to Jews and people throughout this world. Some of those crimes occurred 2,000 years ago. My wife and I have sent a message to our children that we are all God's children and that hate is unacceptable in our home. I believe that we must send a message to people that are filled with hate in this world, that Georgia has no room for hatred within its borders. It is a message that we can send to the people of this state, but it is also a message that you have to send to yourself. I ask you to look within yourself and do what you think is right. I ask you to vote YES on this bill and NO to hate."

Footnote: "A white, married, Republican from what he calls an ultraconservative rural district, Ponder, 45, rose to speak moments after the Georgia House voted 83-82 to SHELVE a proposal to make crimes carry tougher penalties when they are motivated by hatred." Then, Rep. Ponder gave the speech you just read above. Republicans and Democrats alike gave Ponder two standing ovations, then outlawed all hate crimes by a vote of 116-49. Georgia Gov. Roy Barnes signed the new law at a synagogue scarred by swastika-painting vandals. (This version received via Internet e-mail. Published on Saturday, June 24, 2000, in the *Pittsburgh Post-Gazette* "Hate Crimes & Political Courage: The Speech That Turned Heads" by Dennis Roddy. See <http://www.commondreams.org/views/062400-103.htm>).

Hawthorne Effect

A threat to the acceptance of evaluation results which states that if participants experiencing the intervention know they are part of an experiment, they will work especially hard at making the experiment a success, and they will out-score some other group (IRMC Measuring Results of Organizational Performance Course). The Hawthorne Effect resulted from an actual experiment in which the amount of light was increased in a factory. Experimenters did expect output to increase—which it did. But, for control purposes, when they then gradually reduced the light level to where it was originally, the output continued to increase rather than decrease as expected. People are not automatons; this experiment became quite famous. It showed that psychological considerations can outweigh physical ones. It is the basis for social psychological research methods (such as in the Milgram experiments described in *Obedience to Authority*) in which the subjects (people experimented upon) must be deluded regarding the actual experiment or they will confound the results. Thus, to be effective, control groups must be treated exactly the same as experimental groups (thus, placebos are given to simulate medicines in medical research).

Like primitives, we are at first wholly unconscious of our actions, and only discover long afterwards why it was that we acted in a certain way. In the meantime we content ourselves with all sorts of rationalizations of our behavior, all of them equally inadequate.

(C. G. Jung, *The Structure and Dynamics of the Psyche*, CW8, Pantheon Books, New York, 1960, p. 342.)

Health Insurance Portability and Accountability Act (HIPAA) of 1996

Encourages establishment of standards/requirements for electronic transmission of certain health information; provides criminal penalties (maximum 1 year; \$50,000) for wrongly disclosing or obtaining individually identifiable health information; higher penalties for fraud or commercial usage (IRMC Assuring the Information Infrastructure Course).

Every day should be passed as if it were to be our last. (Publilius Syrus, Maxim 633, from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 126.)

Helicopter Principle—see Level of Abstraction

Referring to Von Lennep Muller from Shell International, the helicopter principle of human capacity: "The height from which the individual is able to survey the work situation while still metaphysically keeping his feet on the ground. The higher the helicopter view a person can take, the greater his capacity." (Elliott Jaques, R. O. Gibson, and D. J. Isaac, *Levels of Abstraction in Logic and Human Action: A Theory of Discontinuity in the Mathematical Logic, Psychological Behaviour and Social Organization* Heinemann, London, 1978, p. 296.)

One beautiful morning, El Greco sat in a room with the curtains tightly drawn. Invited to go out for a walk, El Greco said, "No, the sunlight would disturb the light that is shining within me." (*Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 53.)

Helper Applications

Executable software applications, running on a workstation, that claim to facilitate tasks or enhance functionality. They are often downloadable from the Internet (e.g., plug-ins). They are available from various sources, from freeware sites to Microsoft. They have rights to both the workstation and the network to which it is attached. Thus, they can be quite dangerous from a security perspective.

Once a week the road-sweeper came by with his brush. He was a friendly old fellow; and Miss Gidding at the Hollies, got into the habit all that summer of taking him a glass of lemonade and a slice of cake. He thanked her shyly, and that was all. But one evening there came a knock at the back door of the Hollies. The road-sweeper was there, a cauliflower in one hand and a bunch of sweet peas in the other. He seemed embarrassed as he said, "I've brought you these, ma'am, for your kindness." "Oh, you shouldn't," exclaimed Miss Gidding, "It was nothing." And then, the road-sweeper said an odd thing. "Well, no," he agreed, "maybe it wasn't much, really ma'am. But it was more than anybody else did." (From *500 Tales to Tell Again*, H. L. Gee, Ed., London Epworth Press, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 161.)

Hierarchical Storage Management (HSM)

Enterprise storage solution in lieu of adding more disk drives, removing unused files, and manually migrating to offline storage, HSM migrates data from one media to another

(typically from magnetic disk to archival media) and recalls it when needed. It uses removable rotating media (floppy disk), high-density floppy disk drives (zip, EZ, LS-120, HiFD), and removable disk drives (Jaz, Klik!, Quest, SparQ) (IRMC Data Management Strategies and Technologies Course).

Those who do not remember the past are condemned to repeat it. (George Santayana, quoted by John D. Harper in "The Essential Role of Profits," quoted by Paul A. Samuelson in *Readings in Economics*, Chapter 56, McGraw-Hill, 1967, p. 287.)

History—see ANOVA

1) A threat to acceptance of evaluation results which states that some event or activity occurring around the period of the intervention produced the gain in performance, not the intervention (IRMC Measuring Results of Organizational Performance Course). This situation can be addressed using factor analysis or ANOVA. It results from the fact that humans are nonlinear. Thus, there are virtually always more than one factor or variable. Experiments try to limit the intervention (difference between control and experimental groups) to one variable so that the results can then be immediately attributed to that variable or intervention.

2) In acquisition the bidding contractors' histories of past performance (within a designated period) must be included as a major selection criterion.

Those who study history must interpret it in a particular way. Otherwise, they might understand their potential to repeat it. (Jerry B. Harvey, *The Abilene Paradox and Other Meditations on Management*, Lexington Books, Lexington, MA, 1988, p. 86.)

Hoaxes and Myths—see Urban Legends

Many messages replicated over the Internet (especially via e-mail) are totally false and untrue—forming a large and growing set of hoaxes. Many "viruses" only exist in peoples' minds. Various electronic chain mail messages promise good or bad luck. Also, a number of "urban legends" (stories that by virtue of repetition are accepted, erroneously, as fact) have appeared. Some Web sites have developed to debunk these artificial constructs.

<http://www.umich.edu/~wwwitd/virus-busters/hoaxes/phone.html>;
<http://urbanlegends.miningco.com/>; <http://www.vmyths.com/> myths;
[http://www.urbanlegends.about.com/science/urbanlegends/c/ht/00/07/How Spot E mail Hoax0962932962.htm](http://www.urbanlegends.about.com/science/urbanlegends/c/ht/00/07/How_Spot_E_mail_Hoax0962932962.htm); <http://www.snopes2.com/>. See George Smith's "An Electronic Pearl Harbor? Not Likely" (*Issues in Science and Technology*, Fall 1998), Clifford Stoll's *Silicon Snake Oil: Second Thoughts on the Information Superhighway* (Doubleday, New York, 1995), and "Virus Myths" (<http://www.kumite.com/myths>). But also see Jennifer Ruppel's "A Cyber Pearl Harbor? The Infrastructure Protection Task Force and other Government Responses to this Threat" (final paper, Fall 1996, *Computers and the Law*, University at Buffalo School of Law) (IRMC Assuring the Information Infrastructure Course).

I am not a word-magician or a word-fetishist who thinks he can posit or call up a metaphysical reality with his incantation. (C. G. Jung, *Letters*, Vol. 2, Bollingen Series 95, 1951–61, Gerhard Adler and Aniela Jaffe, Eds., Princeton University Press, Princeton, NJ, 1953–75, p. 260.)

Home RF

This is a wireless protocol: led by Proxim; based on shared wireless access protocol (SWAP); intended for home use (LANs); has a 50-meter range; operates at 2.4 GHz (ISM band); has 1.5 Mbps data rate; has no security such as IEEE 802.11 has; and is, therefore, vulnerable to hacker war driving (IRMC Managing Networked Security in a Networked Environment Course).

There is no reason for any individual to have a computer in their home. (Ken Olson, president of Digital Equipment Corp., at the Convention of the World Future Society in Boston, 1977 [received via Internet e-mail and verified in Christopher Cerf and Victor Navasky, *The Experts Speak*, Villard, NY, 1984, p. 231].)

Human Capital—see Expertise Locator

All the expertise, experience, capability, capacity, creativity, adaptability, etc., possessed by the individuals in an organization. It is heavily influenced by those individuals' tacit knowledge. For instance, one manufacturer opened its factory to visitors—even competitors. When questioned about the risk involved, the president stated that watching the processes would do them no good because the real value lay in the knowledge known only to the employees on the line. Company buyouts have, thus, may end in disaster if present employees (with the requisite tacit knowledge) are not retained.

From Gary Hacker's *HR Metrics News* consolidated from Issues 1-5 (OPM):

OPM Human Capital Scorecard: <http://www.opm.gov/hrmc/2001/msg-112a.htm> 3/02. OPM memo of December 7, 2001, announces the development of the Human Capital Scorecard.

Human Capital Scorecard: <http://www.opm.gov/humancapital/scorecard.htm> 4/02. "The Human Capital Scorecard provides a way for agencies to achieve green status on the Executive Scorecard for human capital by improving their management and deployment of human resources."

Human Resource Management Accountability Clearinghouse: <http://www.opm.gov/account/clrnghse/clrnghse.htm> 4/02. "The Human Resources Management (HRM) Accountability Systems Clearinghouse is a compendium of successful and promising applications of HRM accountability systems or their components within Federal agencies and other organizations."

Measurement Forum: <http://www.fedscope.opm.gov/hrm> 4/02. Beta test of U.S. Office of Personnel Management/Office of Merit Systems Effectiveness' Measurement Forum.

Deakin University—Using Data to Improve People Management:
<http://www.psmpc.gov.au/bpo/deakinuniversity.htm> 3/02. "Deakin's HRS Division uses a range of data to improve the quality of people management throughout the University."

Measuring the Impact of Career Development on an Organization by Ron Elsdon and Seema Iyer (Sun Microsystems, Inc.) <http://www.elsdon.com/case.htm> 3/02. "This case looks at measuring how the organization benefits from investing in employee career development, and the paradox of how equipping employees with greater self determination enhances retention."

Human Resource Metrics: Can Measures Be Strategic by John W. Boudreau and Peter M. Ramstad <http://www.ilr.cornell.edu/depts/cahrs/PDFs/WorkingPapers/WP98-10.pdf> 5/02. "For metrics to advance beyond simply a large inventory of potentially-useful indices with no integrating logic or theory, they must be driven by a strategic perspective that can identify key measures, their necessary characteristics, and the linkages necessary to test and enhance their quality."

Strategic Human Resources Management Measures: Key Linkages and the People Vantage Model by John W. Boudreau <http://www.ilr.cornell.edu/depts/cahrs/PDFs/WorkingPapers/WP98-28.pdf> 4/02. "This article proposes that the key to creating meaningful HR metrics is to embed them within a model that shows the links between HR investments and organizational success."

How to Get Your Head Around Measuring Minds by Geoffrey Colvin <http://www.business2.com/articles/mag/print/0,1643,6055,00.html> 5/02. "Optimizing use of the scarce resources is what managers get paid to do, so the smart ones are clamoring for measures—metrics, as they like to say—that will help."

HR Concepts—Numbers? Yuck! by Mike Deblieux <http://www.pihraonline.org/pihrascope/0500/dept7.html> 12/01. "The days of getting through an HR career without using at least basic statistics to answer business questions are numbered."

Measure the Metrics by Karen Hildebrand <http://www.wetfeet.com/employer/articles/article.asp?aid=465> 12/01. "Metrics is a tool for a larger analysis of your recruiting effectiveness."

Metrics by Katherine Lee <http://startribune.hr.com/hrcom/index.cfm/weeklyMag/4FB1B02D-E639-11D4-9AB7009027E0248F> 4/02. "Although companies have been developing a stronger backbone for using quantitative measurements, or metrics, only about 1% of HR budgets are being allocated to this venture. Why is there aversion to numbers?"

Put Your Money Where Your Results Are by Audra Slinkey
<http://www.recruitersnetwork.com/articles/article.cfm?ID=1077> 3/02. "The Recruiting and Staffing function in any organization is one of the hardest departments to measure but also the most crucial."

Checklist of Possible Employment "Metrics" by Dr. John Sullivan
<http://ourworld.compuserve.com/homepages/gately/pp15js17.htm> 3/02. "This checklist can be used as an audit tool or as a mechanism for identifying and continuously improving the employment function."

Develop an Employment Dashboard and Index by Dr. John Sullivan
<http://ourworld.compuserve.com/homepages/gately/pp15js00.htm> (Article #149) 4/02. (NOTE: To read article, scroll down page and click on article #149) and
<http://ourworld.compuserve.com/homepages/gately/pp15s149.htm> 6/02. "You can't improve what you don't measure, so metrics are a crucial element of great recruiting."

HR Effectiveness Metrics by Dr. John Sullivan http://www.zigonperf.com/resources/pmnews/sullivan_hr_metrics.html 12/01. Measures that can be used to evaluate the effectiveness of an HR function.

Measuring Training Effectiveness / Impact by Dr. John Sullivan
<http://ourworld.compuserve.com/homepages/gately/pp15js18.htm> 5/02. "Training can be measured in a variety of ways."

The Incredible Cost of a Bad Hire—Pt 1 & 2 by Dr. Wendell Williams
<http://www.erexchange.com/articles/db/756E166E2E20460FBB32EA7BB751E1FB.asp> 6/02; <http://www.erexchange.com/articles/db/C53401EE8FAF48BE98BA07C7ABFB8B8F.asp> 6/02. "Most people don't realize recruiting costs are more than the cost of acquisition or cost of turnover; they are also deeply hidden in the cost of variable productivity. From the largest organization to the smallest, bad hiring practices tend to secretly cripple organizations."

How to Measure White Collar Employee Performance by Jack Zigon
<http://www.zigonperf.com/articles/whitecollar.html> 6/02. "This article will give you several tools for defining performance standards for the hard-to-measure jobs in your organization."

The 5th Annual HR Measurement 2002 (Presented by IQPC) <http://www.iqpc.com/cgi-bin/templates/100937460331616210937400002/genevent.html?topic=9&event=2038> 12/01 (January 30-31, 2002; Orlando, Florida; \$1899). "You will learn from innovative companies who have faced the challenges of defining, measuring, implementing and improving HR metrics and have identified solutions. You will examine HR measurement systems that reap the greatest rewards and see how you can do the same in your own organization!"

6th Annual HR Measurement Summit (Presented by IQPC) <http://www.iqpc.com/cgi-bin/templates/101432692866470336913900002/genevent.html?topic=9&event=2226> 3/02, 4/02, 5/02, 6/02 (July 22-25, 2002; Chicago, IL; \$1899). The conference theme/emphasis will be on defining, measuring, and improving human resources management.

2003 Performance Measurement Conference (Presented by The Conference Board) <http://www.conference-board.org/conferences/conference.cfm?id=326&event=143&view=topics> 6/02 (March 27-28, 2003; San Diego, CA; \$1875). "Integrating measurement and management for maximum performance."

HRC Web page: <http://www.hrc.navsea.navy.mil/hrc.html>
Human Resources Site: <http://www.donhr.navy.mil>
Navy/Marine Corps White Pages: <http://sdiego.dir.navy.mil/>.

Our present-day consciousness is a mere child that is just beginning to say 'I.' (C. G. Jung, *Civilization in Transition*, CW10, Princeton University Press, Princeton, NJ, 1964, p. 137.)

Human Computer Interface (HCI)

HCI attempts to make computer work more natural using the gamut of human senses. It includes video teleconferencing, speech recognition (automatic speech recognition and natural language processing), virtual reality, and multimedia (IRMC New World of the CIO class).

<http://citeseer.nj.nec.com/HumanComputerInteraction/>
<http://www.ida.liu.se/~miker/hci/index1.html>.

Sattinger's Law: It works better if you plug it in. (Quoted by Lawrence J. Peter in *The Peter Prescription*, William Morrow & Co., New York, 1972, p. 115)

Hyperlink

An Internet address in hypertext markup language (HTML), embedded in an application, that is recognized by the application and can be utilized (via mouse clicks) to immediately access that address or site. Hyperlinks that are recognized by these applications (Microsoft Word, Excel, PowerPoint, Netscape, Web sites, or e-mail programs) are usually automatically colored blue and underlined by the application. Use of the particular hyperlink frequently changes its color. World Wide Web sites frequently include hyperlinks to other places within the site as well as links to other Web sites. Department of the Navy Chief Information Office toolkits (e.g., the knowledge-centric organization and the C-Port or community of practice CDs) include lists of relevant sites that are included as hyperlinks so that users can merely click on them to be automatically attached via their browser. Hyperlinks greatly facilitate Web surfing.

Whatsoever thou resolvest to do, do it quickly. Defer not till evening what the morning may accomplish. (Sri Ramatherio, *Unto Thee I Grant*, Supreme Grand Lodge of Ancient Mystical Order Rosae Crucis, San Jose, CA, 1971, p. 6.)

Hypermedia

The combination of hypertext and multimedia in an online document (*Glossary of IM/IT & KM Terms*).

In my own work, I always hope to do things differently tomorrow in light of what I learn today. (Christ Zois, *Think Like a Shrink*, Warner Books, New York, 1992, p. 2.)

Hypertext

Content written or encoded in a hypertext format ("language") such as hypertext markup language or extensible markup language. Hyperlinks are a particular encoding within one of these languages that permits users to jump to the specified location. Not all hypertext are hyperlinks, however. Content on Web sites is written in a hypertext language; hypertext is the nature of Web site information and display.

The word for us is still a fetish, and we assume that it produces the thing of which it is only an image ... Moreover, superstitious belief in the power of the word is a serious obstacle to our thinking. (C. G. Jung, *Letters*, Vol. 2, Bollingen Series 95, 1951–61, Gerhard Adler and Aniela Jaffe, Eds., Princeton University Press, Princeton, NJ, 1953–75, p. 710.)

HyperText Markup Language (HTML)—see Webification and eXtensible Markup Language

Presently, the primary language or method of encoding entries accessed from Web sites on the World Wide Web. Web pages are built with html tags, or codes, embedded in the text. Html defines the page layout, fonts, and graphic elements as well as the hypertext links to other documents on the Web. Each link contains the URL, or address, of a Web page residing on any server worldwide, hence "World Wide Web." Html is not a programming language like FORTRAN or Java or C++ (if this, do that); rather it could be considered a "presentation language." Html is derived from SGML, the standard generalized markup language, which is widely used to publish documents. Html documents are SGML documents with a fixed set of tags. HTML is generally equivalent to Static HTML. However, Dynamic HTML combines new tags and options, style sheets, and programming to make Web documents look like desktop multimedia applications. It provides an object-oriented view of Web pages and elements; cascades style sheets, layers contents, addresses most page elements, and provides dynamic fonts. See <http://www.devx.com/projectcool/developer/default.asp> for a demonstration (IRMC Data Management Strategies and Technologies Course).

Tutorial on how to do HTML: <http://www.cwru.edu/help/introHTML>

Dynamic HTML: http://developer.netscape.com/openstudio/tech/index_frame.html?content=/tech/dynhtml/dynhtml.html.

For the idiom of words very little she heeded,
Provided the matter she drove at succeeded,
She took and gave languages just as she needed.
(Matthew Prior, 1664–1721, *Jinny the Just*, from *The Oxford Dictionary of Quotations*, Oxford University Press, New York, 1980, p. 400, No. 27.)

Hypertext Transfer Protocol (HTTP)

A protocol for exchanging HTML pages and forms. It is included as a header on URLs, though now browsers automatically use it without the need for user or manual entry.

Sometimes you have to get lost to find yourself. (Betsy, *The Yogi Book*, Yogi Berra, Workman Publications, New York, 1998, p. 125.)

H-1B Visas

In response to IT staffing difficulties (as predicted by the Hudson Commission), Congress has considered expanding the issuance of H-1B visas. These visas are aimed at admitting IT-qualified personnel into the United States in order to ease the present and predicted staffing problems. Due to supply and demand considerations, various groups support or oppose such an increase in foreign IT professionals in the United States. See <http://comment.cio.com/sound.cfm?ID=48>.

Prejudice is a precious thing to be treasured. If you don't guard against acquaintance, it may slip through your fingers. (*Philadelphia Sunday Bulletin*, May 29, 1966, Section 2, p. 1.)

I

Identification

The process an information system uses to recognize an entity (user) to permit access to the system. It is usually lumped together with authentication in the CIANA (confidentiality, integrity, availability, nonrepudiation, and authentication) information security model. Access control is a critical technique for protecting information systems from malicious attacks (especially by outsiders). Many present systems use passwords for identification with the inherent risks of automated password dictionaries, written down passwords, forgotten passwords, human engineering methods for obtaining user passwords, shared passwords, lack of screensavers or auto-logoff procedures, etc. Use of complex passwords only alleviates some of these risks, while actually exacerbating others—the harder it is to remember a password, the more likely that users will short-circuit them in some way. The Navy is introducing common access cards (CACs) for use with the Navy/Marine Corps Intranet. CACs are smart cards that can be used to access computer systems. If temporarily leaving the computer, the user can merely remove the card—locking the computer (with a blanked screen). Upon return and reinsertion of the card, the computer returns to the state in which it was left. It is also envisioned that biometric devices will be incorporated (and encrypted onto the CAC) so that passwords will no longer be required for identification. Similarly, public key infrastructure keys can be embedded into the CAC. It is also anticipated that CACs will become the standard for physical identification—granting access to government buildings and activities vice the multiplicity of badges presently used.

A man goes to knowledge as he goes to war, wide-awake, with fear, with respect, and with absolute assurance. Going to knowledge or going to war in any other manner is a mistake, and whoever makes it will live to regret his steps. (Don Juan, quoted by Carlos Castaneda in *The Teachings of Don Juan: A Yaqui Way of Knowledge*, Pocket Books, New York, 1976, p. 51.)

Independent Basic Service Set (IBSS)

In wireless local area networks, a peer-to-peer architecture wherein each workstation can communicate with every other workstation. See extended service set.

The first of earthly blessings, independence. (Edward Gibbon, 1737–1794, *Autobiography*, p. 176, from *The Oxford Dictionary of Quotations*, Oxford University Press, New York, 1980, p. 224, No. 17.)

Index Number

A numerical score used to represent performance that is a weighted or average composite of several measures (IRMC Measuring Results of Organizational Performance Course). Index numbers are used in a number of decision theory techniques though they may not be referred to as such. Some metrics are composites of several distinct measurements.

Even in the valley of the shadow of death, two plus two do not make six. (Bertrand Russell, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 304.)

Infoglut—see Information Overload

West's 3rd law of dynamic frustration: The solution to any problem is likely to create another problem bigger than the one it solves. (*Philadelphia Daily News* March 24, 1969, p. 29, column 6.)

Information

Data arranged in meaningful patterns; synthesized data. Information tends to be more condensed than data so that it takes less bandwidth to transmit. Also, an appropriate knowledge worker can convert it to knowledge. It generally lacks the contextual factors (at least in a readily usable form) and is not immediately actionable. Information management attempts to provide information to the right persons at the right time so that it can be easily converted to knowledge and appropriately acted upon. IT can readily assist in this process if it has been implemented in a user-friendly manner. Thus, implementation is critical to actual value. In metrics, information measures tend to be output measures versus outcome measures. They are normally intermediate variables, which can strongly concern specific pieces or portions of an enterprise, but not customers, users, and enterprise or organizational measures or metrics. In military parlance, data could be considered tactical, information operational, and knowledge strategic (the three levels of warfare). Several analogous models are shown in the table below.

Models that Parallel Knowledge, Information, and Data (KID)

Models/KID	Knowledge	Information	Data
Levels of warfare	Strategic	Operational	Tactical
DoD architectures	Operational	Systems	Technical
Metrics measures	Systems	Outputs	Outcomes

Information is "the discernment of patterns in the world around us." J. David Johnson, quoted by Phil Irish (IRMC Data Management Strategies and Technologies Course). Taken from Johnson's: *Information Seeking, an Organizational Dilemma*, Westport, CT, Quorum, 1996.

Scholars are seldom wise, being only unaltered people stuffed with thoughts and books. (Idries Shah, *Wisdom of the Idiots*, Octagon Press, London, 1969, p. 66.)

Information Assurance (IA)

The set of methods and techniques employed to protect information, including all of the aspects of CIANA (confidentiality, integrity, availability, nonrepudiation, and authentication). It also includes preparation for and execution of methods for threat protection, detection, reaction, and the restoration after attacks. The CIAO is the prime driver for IA within the enterprise. IA is addressed in the IRMC course Assuring the Information Infrastructure (AII), as well as in other courses in the NSTISSI 4011 certification program. To join the IA Community Mail List, contact CDR Catherine Morgan, Joint Staff J6, IA Division, Pentagon 1C826, Washington, DC, 20318-6000, fax 703-

614-7814, to receive the *IA Digest* (Military and government only). High-confidence networking: http://www.darpa.mil/ito/research/hcn/problems.html#_1; overview of IA: <http://www.darpa.mil/iso/ia/iabrief60/canon60x/index.htm>; IA infrastructure: <http://www.darpa.mil/iso/ia/ssd/iavnila/index.htm>; see *A Summary Guide to Information Assurance: Public Law, Executive Orders, and Policy Documents*, 1/29/99 (IRMC Assuring the Information Infrastructure Course). Also, <http://www.pbs.org/wgbh/pages/frontline/shows/hackers/interviews/schneier.html> (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

Only the sure of foot can give a hand to him who stumbles. (Kahlil Gibran, "Andrew," *Jesus the Son of Man*, Alfred Knopf, New York, 1962, p. 147.)

Information Assurance Red Team

Independent and focused threat-based effort by an interdisciplinary simulated adversary to expose and exploit vulnerabilities as a means to improve the security posture of information systems. This is the third (highest) level of evaluating information assurance (IA) vulnerability—the one in which the team has no a priori knowledge of the system. The General Accounting Office (GAO) used a red team to test the IT vulnerabilities of the State Department (DoS) in 1998. During this effort, GAO sent agents to penetrate the physical security of DoS buildings, hack into their networks, etc. By such methods, user security training, local area network administrator defenses, intrusion detection, and policy implementation were empirically tested. Such attacks forcibly highlight vulnerabilities as well as possible improvements needed to lower these vulnerabilities. Computer emergency response teams sometimes provide the capability of IA red teams. It is highly desirable to periodically test IA vulnerabilities. Empirical testing is the most powerful method both technically and psychologically. For an interview on red team attacks and hackers see: <http://www.pbs.org/wgbh/pages/frontline/shows/hackers/interviews/rhodes.html> (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

The question is in the answer; the answer is in the question. Is it Jeopardy or is it Tao? (The film *Cookie's Fortune*.)

Information Assurance Support Environment (IASE)—see Defense Information Technology Security Certification and Accreditation Process (DITSCAP)

A Web-based DoD help environment for information assurance professionals. It addresses several functional areas: ETA, SAB/MLS, DITSCAP, policy, C&A/ST&E, ITSEC contract, tools, and public key infrastructure. It provides detailed steps for certification activities to support program management offices, security staff, and onsite information security system officers and managers. It provides online assistance, automates processes, promotes reuse, reduces documentation requirements, thus reducing the cost of C&A. The site is unclassified but requires NIPRNET (.mil or .gov e-mail accounts/e-dresses). <http://iase.disa.mil/> and IASE@ncr.disa.mil 703-681-IASE (4273) M-F 0730-1630 (7:30 a.m. to 4:30 p.m.). See system security authorization agreement generation tool and IASSURE contract (IRMC Developing Enterprise Security Strategies,

Guidelines, and Policies Course). CyberProtect exercise <https://iase.disa.mil/> to get CDs from the Defense Information Systems Agency.

16. The previous people who did a similar analysis did not have a direct pipeline to the wisdom of the ages. There is, therefore, no reason to believe their analysis over yours. There is especially no reason to present their analysis as yours. (David Akin, professor, University of Maryland, "Akin's Laws of Spacecraft Design" [received via Internet e-mail] and confirmed by Dr. Akin dakin@umd.edu or DAKIN@SSL.UMD.EDU. See http://spacecraft.ssl.umd.edu/academics/akins_laws.html.)

Information Density—see Knowledge Density and Data Density

The percentage of information (vice data or knowledge) in a particular communication. The three are a zero sum game (i.e., the sum of the three densities is 100 percent, so if one increases, another must decrease to the same extent). Much human communication today is informational (while computer communications are generally data). Higher knowledge densities increase the ability of recipients to understand (since context is included) and act upon the input.

To think justly, we must understand what others mean: To know the value of our thoughts we must try their effect on other minds. (William Hazlitt, "On People of Sense," *The Plain Speaker*, 1826, from *The International Thesaurus of Quotations*, Rhoda Thomas Tripp, Harper & Row, New York, 1970, p. 93, entry 148, No. 7.)

Information Exchange Requirements (IERs) and Standards (IESs)

Communications requirements often for tactical units. The infrastructure implemented to enable them include tactical data links (TDLs), which include tactical digital information links (TADILs) implemented on Link 11, Link 16, and Link 22 and the variable message format (VMF), which are used on different platforms for different types of transmissions. They use standard data formats such as the U.S. message text format (USMTF) and TADIL-J (<http://www.stasys.co.uk/tcl/tcl4.htm> <http://www-jta.itsi.disa.mil/jta/jta-v1.0/sect4.html>, and <http://www.fas.org/irp/program/disseminate/tadil.htm>). The links are tied to NATO standards (see STANAG 5516, TADIL J Message Standard, 4/30/99 and STANAG 5522 for Link 22), and the latest implementation of Link 16/TADIL-J (multifunctional information distribution system, MIDS) was developed under an international cooperative development program (IRMC Advanced Information System Acquisition Course).

Alan Watts once said, "You do not go to a restaurant to eat the menu." (Peter Block, *Stewardship*, Berrett-Koehler Publications, San Francisco, 1993, p. 210.)

Information Infrastructure—see Defense Information Infrastructure, Global Information Grid, and National Information Infrastructure

The set of interconnected and interdependent networks and systems (industrial, commercial, governmental, etc.) that create, distribute, and use information. It primarily, however, focuses on those employing IT as a major portion of their core functioning. The Department of Defense further focuses on those aspects of the information infrastructure that could effect the security of the United States, and the smooth functioning of its

government at all levels, or society as a whole. It encompasses the basic underlying resources used for information management including supporting data, architecture, models, technology, metadata, processes, procedures, and standards. Department of Commerce Secretary chairs the Information Infrastructure Task Force (IITF): <http://nii.nist.gov/>, <http://www.ibiblio.org/nii/NII-Task-Force.html> and <http://nsi.org/Library/Compsec/nii.txt>.

... falling streams, which hurrying from heaven to earth, cared not how they went, so it were downwards. (George MacDonald, *The Portent*, Harper & Row, New York, 1979, pp. 3–4.)

Information Literacy (IL)

Competence in information-age skills enabling a person to recognize when information is or is not needed and how to locate, evaluate, integrate, use, and effectively communicate information. The Department of the Navy Chief Information Officer has an IL toolkit available on a CD to approved parties. Artificial intelligence (AI) methods have also been employed to enhance a seeker's ability to locate information. For example, the knowledge-centric organization toolkit version 2.0 incorporates a case-based reasoning tool to help users find items of interest on the CD. Commercial vendors sell numerous tools to assist in similar searches beyond the standard keyword searches provided, for instance, by Microsoft Windows Explorer.

People who think they know everything are particularly aggravating to those of us who do. (Poster)

Information Management (IM); Corporate Information Management

The creation, use, sharing, and disposition of information as a resource critical to the effective and efficient operation of functional activities. The structuring of functional processes to produce and control the use of data and information within functional activities, information systems, and computing and communications infrastructures (DoDD 8000.1). IM depends not only upon IT but also upon humans. As Thomas Davenport points out in "Saving IT's Soul: Human-Centered Information Management" (*Harvard Business Review*, 94203), "Most of the information in organizations—and most of the information people really care about—isn't on computers. Managers prefer to get information from people rather than computers, people add value to raw information by interpreting it and adding context. The more complex and detailed an IM approach, the less likely it is to change anyone's behavior ... Grand IT schemes that don't match what rank-and-file users want simply won't work" (IRMC Data Management Strategies and Technologies Course). See *Information Management (IM) Strategic Plan: Information Superiority* (version 2.0, DoD CIO, October 1999) and <http://www.c3i.osd.mil/org/cio/dodcios.html> for links to component chief information officer sites and IM plans (IRMC Measuring Results of Organizational Performance Course). DoDD 8000.1 (October 27, 1992) *Defense IM Program* includes process improvement, information resources management, supporting IT and services, security/integrity/survivability are part of the Department of Defense mission and all functional processes with security commensurate with risk and potential harm; the Assistant Secretary of Defense (Command, Control,

Communications and Intelligence) has cognizance (IRMC Assuring the Information Infrastructure Course).

Society for Information Management: <http://www.simnet.org/>

About Information Management: http://www.findarticles.com/cf_dls/m0BLB/2_23/61298114/p1/article.jhtml

Advanced Information Management: <http://www.aim-sw.net/>.

The question of communication is not the mere fact of communication, but the creation of new understanding. (Stewart Edward White, *The Unobstructed Universe*, E. P. Dutton & Co., New York, 1945, p. 256.)

Information Map—see Knowledge Networks and Information Management

A system (usually IT) that provides the location and availability of the most widely used information such as IBM's "Catalog of Information" (e.g., hands-on network environment or HONE). Some organizations have yellow pages to allow people to locate needed knowledge, information, and data as required. Organizations can also provide domain specific products to help locate information (e.g., IBM's "Guide to Market Information"). Hallmark established "information guides" to translate between information users and the IT staff (IRMC Data Management Strategies and Technologies Course). Knowledge networks connect knowledgeable people within an organization.

Maybe everyone carries a plan inside, but it's a faded map that's hard to read and that's why we wander around so and sometimes get lost. (Isabel Allende, *The Infinite Plan*, Harper Collins, New York, 1991, p. 379.)

Information Operations (IO)—see DoDD S-3600.1, *Information Operations*, December 9, 1996 (SECRET/NOFORN)

Those actions taken to affect an adversary's information and information systems while defending one's own information and information systems. (JP1-02). Information operations also include actions taken in a noncombat or ambiguous situation to protect one's own information and information systems as well as those taken to influence target information and information systems (JV 2020). Such operations include computer network attack (CNA) and computer network defense (CND) as well as other information assurance (IA) activities and counter-deception. One challenge for IO is integrating it into more traditional military operations.

See Daniel Kuehl's "Defining Information Power" (Strategic Forum Series, National Defense University Press, June 1997, No. 115, <http://www.ndu.edu/inss/strforum/forum115.html>). Offensive IO (OIO) has the greatest impact during peace or during early stages of a crisis; Defensive IO (DIO) consists of protect-detect-restore-respond (PDRR) functions. *Defensive Information Operations* (CJCSI 6510.01B, change 1 of August 26, 1988) addresses computer incident response teams/computer emergency response teams, the Defense Information Systems Agency's Global Operations and Security Centers (GOSCs), information assurance vulnerability alerts (IAVAs), automated system security incident support team (ASSIST), and their reporting chains and relationships. *Joint Doctrine for Information Operations* (Joint Pub. 3-13 of October 9, 1998) codifies for the

warfighter how IO will serve as an integral part of all military operations and its links to the Crisis Action Planning Process (CAPP), the Joint Operations Planning and Execution System (JOPES), and the Joint OPORD/CONPLAN/OPLAN of any joint force. General Gordon Sullivan, former Army Chief of Staff, noted that in the 21st century "Information is the currency of victory on the battlefield" (IRMC Assuring the Information Infrastructure Course).

Wise men profit more from fools than fools from wise men; for the wise men shun the mistakes of fools, but fools do not imitate the successes of the wise. (Marcus Porcius Cato, the Elder, 234-149 B.C., from Plutarch's *Lives*, Cato, Section 8, from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 107.)

Information (and/or Data) Overload (Infoglut)

"Society will face a deluge of data within 50 years." Richard Meier, 1962.

"Information is cheaper, faster, and denser than ever before." David Schenk, 1997.

"We have transformed information into a form of garbage." Neil Postman, Ph.D.

"Gartner Group estimates that 'infoglut' will become a mission-critical crisis by 1999."

PR Newswire, December 16, 1996.

Data overload is 90 percent self-inflicted and only 10 percent externally inflicted.

In 1996 Reuters Business Information Group surveyed 1,300 mid-level managers around the world and found that 40 percent reported physical illness due to infoglut, 50 percent didn't use all of the information available to them in making decisions, and 30 percent wanted more information.

Gartner Group estimates that only 10 percent of information is ever analyzed.

Don Keough, past president of Coca Cola, said that "Whoever has the information the fastest and uses it: wins."

"The reason to collect data is to reduce uncertainty," but too much increases uncertainty and frustration, decreases altruism, impairs decision making, creates overconfidence, and causes physiological effects.

The effects of data overload are: attention deficit, confusion, increased uncertainty.

"Disconcertingly, it is possible that people will become so overloaded with information they will 'escape,' turning to demagogues who offer simple solutions to increasingly complex problems." Johnson, 1996. [from the IRMC Data Management Strategies and Technologies Course, February 14-18, 2000, Phil Irish, irishp@ndu.edu].

There has been more information produced in the past 30 years than during the previous 5,000. (Richard S. Wurman, *Information Anxiety*, quoted by Price Pritchett, *The Employee Handbook of New Work Habits for a Radically Changing World*, Pritchett & Associates, Dallas, TX, 1994, p. 20.)

Information Resources Management (IRM)

A predecessor term to IT. Thus, under the Defense Acquisition Workforce Improvement Act, the communications and computers specialty area abbreviation is IRM. Automated information systems (AIS) and automated data processing (ADP) are also predecessor terms. Prior to consolidation of DoD 5000 and DoD 8000 series documents,

the Major Automated Information System Review Council (MAISRC) reviewed major AIS programs.

The process of managing information resources to accomplish agency mission. The term encompasses both information itself and the related resources, such as personnel, equipment, funds, and IT (*OMB Circular A-130*) (IRMC Data Management Strategies and Technologies Course).

The IRM Program (DoDD 7740.1, June 20, 1983) implements the Paperwork Reduction Act, with the Assistant Secretary of Defense (Comptroller) having oversight (IRMC Assuring the Information Infrastructure Course).

Brooks' Law: If software is late, by putting more people on it, you can make it even later. (Fred Brooks, *The Mythical Man-Month*, Addison-Wesley, Reading, MA, 1975.)

Information Resources Management College (IRMC), <http://www.ndu.edu/irmc/>

IRMC is the DoD's college for IT and related studies. It is part of the National Defense University (NDU). IRMC offers a chief information officer (CIO) certificate program and an NSTISSI 4011 certification program. A considerable amount of the portions of this pocket encyclopedia was taken from the experience and materials from ten courses taken at IRMC resulting in the attainment of the two certificates. These include:

AII: Assuring the Information Infrastructure (NSTISSI required course, former CIO primary course)

CST: Critical Information Systems Technologies (NSTISSI required course, CIO primary course)

DMS: Data Management Strategies and Technologies (CIO primary course)

ESS: Developing Enterprise Security Strategies, Guidelines, and policies (NSTISSI required course)

IRM303: Advanced Information System Acquisition (also applicable to DAWIA IRM certification)

Leadership for the 21st Century (CIO primary course)

MOP: Measuring Results Of Organizational Performance (required for CIO certificate)

NWC: New World of the CIO (required survey course of the 10 federal CIO competencies)

SAM301: Advanced Software Acquisition Management (CIO elective course)

SEC: Managing Information Security in a Networked Environment (CIO primary course, NSTSSI required).

Human history becomes more and more a race between education and catastrophe. (H. G. Wells, quoted by Karen Goertzel, January 17, 1996, wangfed.com.)

National Defense University Library: <http://www.ndu.edu/library/library.html>

National Defense University home page: <http://www.ndu.edu>.

Information Security (IS) (INFOSEC)—see Defense Information Systems Agency

The process of protecting information (systems) from misuse or unauthorized use. GAO compiled industry best practices in IS in their *Executive Guide to Information Security*

Management: Learning from Leading Organizations (GAO/AIMD-98-21 Exposure Draft, November 1997). See "defense in depth" above. Essential elements of good IS (according to the Government Accounting Office) include: a central management focal point, a routine process for assessing risks, a comprehensive and current set of written policies, adequate security awareness among employees, and effective monitoring and evaluation of policies and controls, and an adequate IS plan (IRMC Managing Networked Security in a Networked Environment Course). See Defense Appropriations Act (P. L. 106-65, October 5, 1999, subtitle E—*Information Security*, Section 1041-5) and *DoD Information Security Program* (DoDD 5200.1, June 7, 1982, as updated through April 15, 1994, via change 2); *Information Security Program Regulation* (DoD 5200.1-R change 1 of June 27, 1988) (IRMC Assuring the Information Infrastructure Course). The three pillars of INFOSEC: provide a means for calibrating the degree of risk associated with valuable information and processes; define a set of controls for assessing and compensating for weaknesses in each layer of technology and the associated procedures; assist the enterprise in categorizing the nature of the threat facing it.

There are numerous techniques for increasing personnel sensitivity to INFOSEC issues and improving an organization's posture including: vulnerability demos, risk assessments, audits, illegal software checks, establishing a management oversight committee, penalties for violations, amnesty day for violators who wish technical assistance to become compliant, annual INFOSEC Day, employee signatures on statements of policy and compliance, articles for in-house periodicals, add items to help screens, software disk with self-help and assessment, CyberProtect "game," public key infrastructure, on-screen security banners, trinkets (coffee mugs/mouse pads/coasters/air fresheners). The NIST special publication *Self-Assessment Guide for IT Systems* (800-XX, March 9, 2001) provides a method to assess IT security programs and establish targets for improvement using an extensive questionnaire with specific control objectives (301-975-3293, marianne.swanson@nist.gov) (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

Why does a man have two ears and one mouth? ... so that he can listen twice as much as he talks. (Gina Cerminara, *Many Lives, Many Loves*, William Sloan Associates Publishers, New York, 1963, p. 143.)

AllNet InfoSec Internet Protection Services: <http://all.net/>
Internet Security Systems Internet Scanner: <http://iss.net/>
Computer Security Institute (CSI): <http://www.gocsi.com>
National Computer Security Association (NCSA): <http://www.ncsa.com>
<http://iweb.nosc.mil/services/security/html/person~1.html>
FAQs: <http://www.vtcif.telstra.com.au/info/security.html>
<http://www.alw.nih.gov/Security>
<http://www.fish.com/satan>
Network Security Institute (NSI): <http://www.nsi.org/compsec.html>
<http://www.netsurf.com/nsf/v01/01/nsf.01.01.html>
<http://www.whitehats.com/>
Misc: <http://www.alw.nih.gov/Security/security-docs.html>

Computer Security Institute: <http://www.gocsi.com>
Computer Security News Daily: <http://www.mountainwave.com>
DoD Security Institute: <http://www.dtic.mil/dodsi/bulletin.html> replaced by the
DSS Academy: <http://www.dss.mil/training/>
Navy INFOSEC site: <https://infosec.navy.mil/>.

Information Security Analysis Center (ISAC)—see Presidential Decision Directive (PDD) 63

Organization set up in accordance with PDD-63 that acts similar to an early warning computer emergency response team by sharing information security information among industry and government (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

Presidential Decision Directive 63 (PDD-63):
<http://www.fas.org/irp/offdocs/pdd/index.html>.

I am sick and tired of war. Its glory is all moonshine. Only those who have never fired a shot nor heard the shrieks and groans of the wounded cry aloud for blood, more vengeance, more destruction. War is Hell. (William Tecumseh Sherman, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 499.)

Information Superiority (IS)—cf. Knowledge Superiority

The capability to collect, process, and disseminate an uninterrupted flow of information while exploiting or denying an adversary's ability to do the same (*JP1-02*). Information superiority is achieved in a noncombat situation or one in which there are no clearly defined adversaries when friendly forces have the information necessary to achieve operational objectives (*JV 2020*). That degree of dominance in the info-domain which allows friendly forces the ability to collect, control, exploit, and defend info without effective opposition (*AFDD 2-5*, USAF, 1998). IS is a key enabler of victory, but it is transitory in nature and must be created and sustained by the joint force through the conduct of information operations; information superiority is not an end unto itself.

Change is a matter of personal responsibility, not a response to the expectations of those above or below us. (Peter Block, *Stewardship*, Berrett-Koehler Publications, San Francisco, 1993, p. 229.)

Information System (IS)

(1) The entire infrastructure, organization, personnel, software, and components that collect, process, store, transmit, display, disseminate, and act on information (*Glossary of IM/IT & KM Terms*). Part of the global information grid (GIG) or defense information infrastructure (DII).

(2) A discrete set of information resources organized for the collection, processing, maintenance, transmission, and dissemination of information, in accordance with defined procedures, whether automated or manual (*OMB Circular A-130*) (IRMC Data Management Strategies and Technologies Course).

Reality is for people who can't handle science fiction. (Quoted by Tom Zmudzinski, Defense Information Systems Agency, January 18, 1996.)

Information System Integration (IS Integration)

The process of transitioning numbers of legacy systems into an integrated system (usually making the resulting system interoperable with the larger environment). The process includes conducting business process reengineering (government reinvention) to determine the need for process or system redesign, consolidation, or elimination. It results in a major reduction in separate applications and operating and maintenance costs. It also involves the analysis of contractor off-the-shelf alternatives, further emphasizing standardization and rationalization. Present efforts by Task Force Web and program executive officer for IT (PEO-IT) (for the Navy/Marine Corps Intranet) necessitate such application analyses and consolidation.

Only those who start with skepticism can open themselves to true adventure. (David Brin, *Heaven's Reach*, Bantam Books, New York, 1998, p. 53.)

INFOSEC Assessment Methodology (IAM)

The protection of information systems against unauthorized access to or modification of information, whether in storage, processing, or transit, against the denial of service to authorized users or the provision of service to unauthorized users, including those measures necessary to detect, document, and counter such threats (*Glossary of IM/IT & KM Terms*). INFOSEC includes those efforts employed in information assurance. See John Egan's "Information Security Threats to Software Intensive Systems" (1997 *Software Technology Conference*, April 27-May 2, 1997) (IRMC Advanced Software Acquisition Management Course).

Many years ago, when I worked as a volunteer at a hospital, I got to know a little girl named Liz who was suffering from a rare and serious disease. Her only chance of recovery appeared to be a blood transfusion from her 5-year old brother, who had miraculously survived the same disease and had developed the antibodies needed to combat the illness. The doctor explained the situation to her little brother, and asked the little boy if he would be willing to give his blood to his sister. I saw him hesitate for only a moment before taking a deep breath and saying, "Yes, I'll do it if it will save her." As the transfusion progressed, he lay in bed next to his sister and smiled, as we all did, seeing the color returning to her cheeks. Then his face grew pale and his smile faded. He looked up at the doctor and asked with a trembling voice, "Will I start to die right away?" Being young, the little boy had misunderstood the doctor; he thought he was going to have to give his sister all of his blood in order to save her. (Received via Internet e-mail; this is an Urban Legend. See <http://www.snopes2.com/> or Jack Canfield and Mark Victor Hansen. *Chicken Soup for the Soul*. Deerfield Beach, FL: Health Communications, 1993. ISBN 1-55874-291-3 (pp. 27-28).)

INFOSEC Assessment Methodology (IAM)—see Audit and Presidential Decision Directive 63

The National Security Agency's method of assessing the security posture of an enterprise. It attempts to identify vulnerabilities and to recommend elimination or mitigation of them. It uses no hands-on testing; is conducted by request only; requires management buy-in; depends on cooperation of people; is conducted on a nonattribution

basis; and treats findings as proprietary. It provides system owners with a level of confidence regarding the security of sensitive but unclassified information per federal law. IAM helps determine what information is critical to the organization, what system processes store/transmit that critical information, what information systems security (INFOSEC) posture to take, what the potential vulnerabilities are, and what solutions can be used to mitigate or eliminate these vulnerabilities. It involves three phases: preassessment (to refine customer needs, gain an understanding of the criticality of customer information; identify system and its boundaries; coordinate logistics with the customer, and write an assessment plan), on-site activities (to explore and confirm the information and conclusions made during phase one; to perform data gathering and validation via interviews, documentation, and system demonstrations; and to provide initial analysis and feedback to the customer), and post-assessment (to finalize analysis and prepare and coordinate the final report).

The assessment team includes the team lead, one or two other team members, and a customer team member supported by customer representatives (upper-level manager, functional area representatives, senior system manager, and senior INFOSEC manager). The timeline includes: preassessment visit (1–2 days), preassessment (2–4 weeks), on-site visit (1–2 weeks), and post-assessment period (2–8 weeks). The preassessment phase is essential to manage customer expectations and to understand customer needs; a shared understanding of the scope and level of detail (abstraction) must be achieved. A criticality matrix should be constructed with the various types of information used by the organization versus CIANA (confidentiality, integrity, availability, nonrepudiation, and authentication) requirements. The matrix is filled with high, medium, or low impact (i.e., H, M, or L is placed in each block/cell as appropriate). Interviews during the on-site visit should last one half hour to 2 hours; interviewees may ask the interviewers (two are recommended) for copies of their notes from the interview.

It is important to capture both official and unofficial procedures. Baseline information categories include: INFOSEC documentation, INFOSEC roles and responsibilities, identification and authentication, account management, session control, external connectivity, telecommunications, auditing, virus protection, contingency planning, maintenance, configuration management, backups, labeling, media sanitization/disposal, physical environment, personnel security, training and awareness, encryption/public key infrastructure. Documentation should include: policy, guidelines and requirements, system security plans (SSPs), standard operating procedures (SOP), and user system security manuals. Senior security officials include: designated approval authority, critical infrastructure assurance officer, chief information officer, chief information security officer, information system security manager, and information system security officer. The on-site visit includes both in-brief and out-brief of initial findings (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

Present suffering is not enjoyable, but life would be worth little without it. The difference between iron and steel is fire, but steel is worth all it costs. Iron ore may think itself senselessly tortured in the furnace, but when the watch spring looks back, it knows better. (Rufus Babcock, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 17.)

Information Technology (IT)—see Software

Computer hardware and software used in the acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of knowledge, information, or data. IT includes computers, ancillary equipment, software, firmware, networks and systems, services (including support services), and related resources. In accordance with the principles of acquisition reform, IT today is primarily contractor off-the-shelf (COTS) with some tailoring. Generally, the rule of thumb is that the build or buy break point is 80 percent COTS and 20 percent tailoring. Thus, projects should plan for 0–10 percent tailoring to allow for unanticipated growth in tailoring or new code. The Navy and Marine Corps Intranet, for instance, has used acquisition reform imperatives toward performance versus design specifications by awarding a large seat management contract. In seat management, the purchaser contracts for a number of seats with specified performance and support. In addition, the contractor may have a technology refresh cycle requiring that performance be upgraded on a regular basis to match a standard or benchmark. The purchaser does not own the equipment, software, or even the connectivity (wires, local area networks, etc.).

With advances in equipment, quantity discounts, and other areas, software has become the driver for both IT costs and performance. While innumerable vendor solutions abound, many are only partial solutions such that implementing them across an enterprise becomes a major challenge to a CIO. An "IT Management Planning Tool" CD-ROM developed by (and available from) the Department of Commerce is a self-guided, step-by-step assessment of a company's IT use and helps with IT-related investment improvements. It includes a video on IT benefits, a users' manual, and Web links (*Leadership for the New Millennium: Delivering On Digital Progress and Prosperity*, 3rd annual report of the U.S. Government Working Group on Electronic Commerce, January 16, 2001). IT includes automated digital processing (ADP) as defined in Section 111(a)(2) of the Federal Property and Administrative Services Act of 1949; however, *OMB Circular A-130* excludes certain critical national security missions defined in 44 U.S.C. 3502(2) and 10 U.S.C. 2315 (IRMC Data Management Strategies and Technologies Course). According to Wiley's *The Healthy Software Project* (1995), IT projects fail for a number of reasons.

Why IT Projects Fail

Reason	%	Litigation time	%
Inadequate resources	69	Up to a year	60
Unrealistic deadlines	67	Up to two years	20
Unclear direction	63	Up to eight years	20
Uncommitted team	59		
Insufficient planning	56		
Changes in direction	42		
Conflict between teams	35		

Main problem areas include: cost and schedule estimation (incomplete or inaccurate estimates, misrepresented contractor capabilities, poor historical data, poor timing, poor use of models), reuse/COTS (unable to integrate, dysfunctional reuse code, unavailable code, insufficient planning, contractor relationships, dangerous assumptions, plan to use

as-is), contractor capability (insufficient experience in the domain, organizational interface problems, poor testing (staff, plan, or consensus), geographic separation, incomplete source selection considerations, resource loading mismatch, incomplete life-cycle development planning), risk management (inadequate planning and implementation, poor mitigation strategies, poor risk tracking, lack or commitment to risk management), requirements management (ambiguous requirements, uncoordinated requirements with stakeholders, insufficient change control, poor cost/benefit analyses, poor criticality analyses, poor coordination among designers, developers, and testers), and test methods or processes (domain knowledge deficiencies, poor test planning, insufficient software quality involvement, insufficiently comprehensive planning/testing). Warning signs: high proposed reuse rate, large delta between bids, immature risk and development plans, no reuse plan, personnel instability (>10 percent per year turnover), high defect density (>4 defects per 1,000 source lines of code (SLOC)) and high requirements instability. People + Process + Technology model and a life-cycle mentality; people burn-in (IRMC Advanced Software Acquisition Management Course).

<http://www.microsoft.com/indonesia/enterprise/itadvisor.html>;

Military Information Technology online: <http://www.mit-kmi.com/> and *Chips Magazine* published by the DON CIO and SPAWAR: <http://www.chips.navy.mil/>.

The art of progress is to preserve order amid change, and to preserve change amid order. (Alfred North Whitehead, *Process and Reality*, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 311.)

Information Technology Architecture (ITA)—see Architecture Framework and C⁴ISR Integration Support Activity

The ITA is described in the Chief Information Officer (CIO) Guidance for ITAs, *Development, Maintenance, and Implementation of Agency ITAs* (Memorandum M-97-16, June 18, 1997), promulgated by Franklin D. Raines, Office of Management and Budget (OMB). This memo “transmits guidance to federal agencies on the development and implementation of ITAs,” and describes how ITAs increase interoperability and reduce redundancy. It refers to the Clinger-Cohen Act and OMB Memorandum 97-02, *Funding Information Systems Investments*, and OMB Circular A-130. An ITA is defined as including an enterprise architecture and a technical reference model with standards profiles. The enterprise architecture should balance an agency’s balance between centralization and decentralization. The guidance adopts the five-component model of National Institute of Standards and Technology Special Publication 500-167, *Information Management Directions: the Integration Challenge*, but agencies are permitted to identify different components as appropriate. Components include: business processes, information flows and relationships, applications, data descriptions, and technology infrastructure. See architecture framework for the Department of Defense DoD implementation via the C⁴ISR (Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance) Architecture Framework; (IRMC New World of the CIO Course) and the Federal Enterprise Architecture Framework (version 1.1, February 1999 draft), by the subgroup of the CIO Council <http://www.itpolicy.gsa.gov/mke/archplus/cmodel.htm>.

However, it states (p. 9) that “research indicates that only 20 percent of an enterprise architecture is strategically valuable” (IRMC Data Management Strategies and Technologies Course). Waivers can be obtained for legacy systems if compliance requires funding. ITA implementation requires meeting Clinger-Cohen Act goals and instituting change management, legacy systems integration, IT personnel planning, and compliance certification (IRMC Advanced Information System Acquisition Course).

Information Technology: Enterprise Architecture Use Across the Federal Government Can Be Improved. GAO-02-6 February 19, 2002, <http://www.gao.gov/new.items/d026.pdf> (184 pp.). *Executive Office of the President: Analysis of EOP's 1999 Information Technology Architecture Update and Capital Investment Plan Report.* AIMD-00-63R (16 pp.) February 4, 2000, <http://archive.gao.gov/f0302/163215.pdf>; <http://www.whitehouse.gov/omb/memoranda/m97-16.html> M-97-16.

There is, I have been taught, all the difference in the world between the desire and the act. The one is written on water, the other carved in stone. (Lawrence Block, *Even the Wicked*, William Morrow & Co., NY, 1997, p. 131.)

Information Technology Governance—see Control objectives for Information and related Technology (CobIT)

A structure of relationships and processes to direct and control the enterprise in order to achieve the enterprise's goals by adding value while balancing risk versus return over information technology (IT) and its processes. CobIT includes an IT governance maturity model similar to the capability maturity model (CMM) with six levels: 0, nonexistent; 1, initial or ad hoc; 2, repeatable but intuitive; 3, defined process; 4, managed and measurable; and 5, optimized. It also delineates a number of critical success factors, key goal indicators, and key performance indicators (*CobIT Executive Summary*, July 2000, 3rd ed.) (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

12. There is never a single right solution. There are always multiple wrong ones, though. (David Akin, professor, University of Maryland, “Akin's Laws of Spacecraft Design” [received via Internet e-mail] and confirmed by Dr. Akin dakin@umd.edu or DAKIN@SSL.UMD.EDU. See http://spacecraft.ssl.umd.edu/academics/akins_laws.html.)

Information Warfare (IW)—see Command and Control Warfare; DoDI 3600.2 *Information Operations Security Classification Guide* (SECRET/NOFORN)

Offensive and defensive use of information and information systems to exploit, corrupt, or destroy an adversary's information and information systems while protecting one's own. See DoDI 3600.1 or Joint Pub 3-13. See Daniel Kuehl's “Joint Information Warfare” (Strategic Forum Series, National Defense University Press, March 1997, No. 105, <http://www.ndu.edu/inss/strforum/forum105.html>; Martin Libicki's *What is Information Warfare?* (The Center for Advanced Command Concepts and Technology, NDU, Washington, DC, August 1995); *Defending Cyberspace and Other Metaphors* (NDU, Washington, DC, 1997), which includes an extensive description of how the human body defends itself using its immune system; and his *The Mesh and the Net: Speculations on*

Armed Conflicts in Time of Free Silicon (The Center for Advanced Command Concepts and Technology, NDU, Washington, DC, August 1995); David Alberts' *Defensive Information Warfare* (The Center for Advanced Command Concepts and Technology, NDU, Washington, DC, August 1996); and George Smith's "An Electronic Pearl Harbor? Not Likely" (*Issues in Science and Technology*, Fall 1998); Marcus Ranum's "Internet Attacks" <http://www.ranum.com/pubs/pdf/internet-attacks.pdf> (and see <http://www.ranum.com/pubs/pdf/index.htm> and <http://www.ranum.com/pubs/index.shtml>); Mindy Blodgett's "Is IT Safe?" (*CIO Magazine*, July 15, 1999, http://www.cio.com/archive/071599_safe.html); Anderson Kent's "International Intrusions: Motives and Patterns" <http://www.aracnet.com/~kea/Papers/paper.shtml>, 1994. "There's a war out there old friend, a world war, and it's not about who's got the most bullets. It's about who controls the information—about how we see and hear, how we work, what we think. It's all about the information." (*Sneakers*, 1992, MCA Universal Pictures). *Joint Information Warfare* (CJCSI 3210.01 of January 2, 1996, Secret/NOFORN) (IRMC IAA). *Defense Science Board Information Warfare Report* is online at: <http://cryptome.org/iwd.htm>. IW electronic publication: <http://www.infowar.com>.

JED (IW/EW) Journal of Electronic Defense:

<http://www.jedefense.com/jed.html>

Institute for the Advanced Study of Information Warfare (IASIW):

<http://psycom.net/iwar.1.html>

ARPA's Information Survivability formerly known as "Defensive Information Warfare:" <http://www.darpa.mil/ipto/psum1999/j101-0.html>

A Guide to Information Warfare: <http://www.futurewar.net/>

NPG IW Naval Postgraduate School: <http://www.nps.navy.mil/iwag/>
<http://www.iwar.org.uk/> and <http://www.unbsj.ca/library/subject/infowar.htm>

War is the father of all (Heraclitus) ... we need crises in life if we are to grow, and if the aspirant is not aware of any in his life, he should precipitate them. (Raymund Andrea, "The Conflict of Opposites," *The Andrea Lectures*, Ancient Mystical Order Rosae Crucis, 1991, p. 50.)

The goal of information warfare is to checkmate your opponent before he gets his pieces out of the box. (David Probst, *C4I-PRO-Digest*, 1996, Vol. 2, February 11, No. 183.)

Infrastructure

The entire interrelated set of one's processors, operating systems, software, networks, communications links, components, servers, and related hardware. All the hardware and software (sometimes including standards and requirements documents) performing particular functions (e.g., computing, KM, or IT).

If your outgo exceeds your income, your upkeep will be your downfall. (Gerald F. Lieberman, Ed., *3,500 Good Quotes for Speakers*, Doubleday, Garden City, NY, 1983, p. 89.)

Institute for Knowledge Management (IKM); <http://ikm.ihost.com>

An organization originally formed by the International Business Machines (IBM) corporation, but which functions as an independent body, that promotes KM. Laurence Prusak (co-author so several well-known KM books such as *Working Knowledge* and *In Good Company*) is a prime driver of the IKM. IKM holds periodic meetings that include presentations by knowledgeable and often well-known people in KM. They also perform studies in KM via projects and working groups. In addition, IKM publishes periodicals on KM including *KM Directions* and *Knowledge Connections*. IKM is located at 55 Cambridge Parkway, Cambridge, MA, 02142.

The obvious implication is that both tacit and explicit knowledge solidify and ossify. Unless distinct modes of reasoning—such as alternative explanations of customers' responses to a competitor's new product introduction—are articulated and assessed, radical disjunctures in knowledge content or breakthroughs in insight are considerably less likely to emerge. In short, unless the "frames" points of view embodied in perceptions, beliefs, assumptions, and projections about the future are broken by challenging prevailing modes of thinking and reasoning, knowledge generation and use will be severely restricted. (Liam Fahey and Laurence Prusak, "The Eleven Deadliest Sins of Knowledge Management," *California Management Review*, Berkeley, CA, Spring 1998, Vol. 40, Issue 3, pp. 265–276.)

Institute of Electrical and Electronics Engineers (IEEE); <http://www.ieee.org/>

IEEE is a professional organization of engineers that promote engineering. However, the IEEE has also established and maintains certain engineering standards (similar to ANSI). IEEE 802.11 is the standard for wireless communications (equivalent to IEEE 802.3 for wire communications). It was completed in 1997, addressing infrared, frequency hopping spread spectrum, and direct sequence spread spectrum transmission. It was limited to 1 or 2 Mbps. IEEE 802.11b was ratified in 1999, introducing the high rate standards of 5.5 and 11 Mbps. In addition, it made direct sequence spread spectrum its default. It is the wireless version of Ethernet. 802.11 uses the Industry, Science, and Medicine (ISM) frequency band—from 2.4 to 2.483.5 GHz (or 2400 to 2483.5 MHz). Thus, its bandwidth is 83.5 MHz. Spread spectrum is required (by the FCC) to avoid in-band interference, and power is limited to 1 watt. Encryption is optional and it supports ad hoc (peer-to-peer) networking, but it has relatively high power requirements and is subject to ISM band interference. Range is about 50 meters. It utilizes a signal collision avoidance system (carrier sense multiple access and collision avoidance, CSMA/CA, similar to Ethernet except avoidance versus detection). The sending unit checks with the receiver to see if there is any traffic. If not, it transmits. The receiver acknowledges receipt of transmission. If not received, the transmitter will re-transmit. Interference with other devices (blue tooth or microwave ovens) can be minimized if devices are kept at least 10 feet apart. 802.11 uses only 25 percent of the ISM band (blue tooth uses the entire band), but it uses dynamic speed adjustment to compensate for interference. Non-U.S. blue tooth devices can adjust their frequency hops to avoid the 802.11 band so that they do not interfere with each other, but this is not legal in the United States or in parts of Asia.

Few people think more than two or three times a year. I have made an international reputation for myself thinking once or twice a week. (George Bernard Shaw, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 243.)

Instrument

Tests, rating forms, checklists, questionnaires, and other such forms used to obtain measurements of abstract data (IRMC Measuring Results of Organizational Performance Course).

It has, I believe, been often remarked that a hen is only an egg's way of making another egg. (Samuel Butler, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 284.)

Integrated Definition for Information Modeling (IDEF1X)—see DSS

A Joint Technical Architecture-approved standard for Department of Defense information modeling described in Federal Information Processing Standard Publication 184. Can be used in conjunction with Erwin data modeling tool (Logic Works Inc.). See ISO/IEC 11179, IEEE P1320.1, IDEF0, IEEE 1320.2, and the Unified Modeling Language (UML) (IRMC Advanced Information System Acquisition Course). See Chavez, Lucks, and Yoder's "EDI: Successful Reengineering Using IDEF" and Hanrahan's "The IDEF Process Modeling Methodology" both in *Crosstalk* (June 1995, Vol. 8, No. 6) (IRMC Advanced Software Acquisition Management Course).

... The teachings of the Buddha are not in themselves the experience of enlightenment. Just as a map of the city of Paris is not the city of Paris itself. (Thich Nhat Hanh, *Thundering Silence [Sutra on Knowing the Better Way to Catch a Snake]*, Parallax Press, Berkeley, CA, 1993, p. 33.)

Integrated Digital Environment (IDE)—

<http://www.dsmc.dau.mil/pubs/mfrpts/mrfr%5F1996.htm>

Project that envisions a standard set of applications (e.g., for a program manager's use) forming an interconnected set (environment) for managing programs in such a way that rotating personnel can use the same systems for their new offices or positions without relearning new management systems (military personnel "rotate" or move to different positions every 3-4 years). Also, higher authority oversight would be simplified with standardized project manager products from the IDE.

Basic research is what I am doing when I don't know what I am doing. (Wernher von Braun, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 439.)

Integrated Product (or Process) Team (IPT)

Department of Defense (DoD) defines an IPT as a cross-functional team formed for the specific purpose of delivering a product for an external or internal customer (DoD OUSD [AT] 1996, 1-7). IPTs use diverse information and knowledge to perform special studies, solve complex problems, or acquire products such as combat weapons systems. The special value of an IPT lies in the diversity of views and backgrounds held by its members. Furthermore, IPTs were devised so as to eliminate infighting amongst those

creating programs and documents and those reviewing them. By integrating the reviewers into the IPT, they become part of the solution. Also, changes made early cost less. Communications are often improved when different viewpoints are explicated publicly in an IPT. There are often different, simultaneous levels of IPTs. The Overarching IPT (OIPT) is the highest level, the Integrating IPT (IIPT) is the intermediate level, and the various Working IPTs (WIPTs) are usually the lowest level. IPTs differ significantly in a qualitative sense from other kinds of groups such as working groups, teams, etc. See Katzenbach and Smith's "The Discipline of Teams" (*Harvard Business Review*, March-April 1993, 93207).

As uncomfortable as it may be, our perception needs to be continually challenged by those whose experience is dissimilar to our own. Differing perceptions need to be understood, not rebuffed. Truth and reality generally lie beyond the mere collection and analysis of unprejudiced facts. Even within our own disciplines, viewpoints from colleagues in different countries and work environments help to mature and broaden our perspectives. Only when our minds expand to understand the perceptions of others will our own biases be put into appropriate perspective. (K. Owen Ash, the editor's column, *Journal of the International Federation of Clinical Chemists*, 2.2, ISC House, Progress Business Centre, Slough, England, 1990; quoted by June Singer in "Jung's Typology in the Workplace," *Psyche at Work*, Murray Stein and John Hollwitz, Eds., Chiron Publishing, Willamette, IL, 1992, p. 214.)

Integrated Services Digital Network (ISDN)

A form of connectivity provided by telephone companies to expand data rate capacity for users; it combines voice and digital network services in a single medium (phone line). ISDN lines have varying capacities depending upon the subscription. Video teleconferencing (VTC) requires more bandwidth than can be supplied by one phone line (minimum is two or 128 kbps). ISDN can provide the necessary capacity. It can also integrate the voice, video, and data into one synchronous transmission. Some VTC systems include data transmissions so that users can view the same images on computer screens attached at both ends of the videoconference. System response times can be significantly reduced by upgrading users from 56 kbps dial-up service to 128 kbps (or higher) ISDN service. As the Navy Standard Integrated Personnel System upgraded Navy personnel software, it had to upgrade connectivity at its many sites to support the increased bandwidth needed to obtain reasonable latencies (user response times). One of the options was to install ISDN lines; this was accomplished at a number of user sites. Of course, the costs for ISDN are higher than for regular phone service.

You ask me what it is I do. Well actually, you know,
I'm partly a liaison man and partly P. R. O.
Essentially, I integrate the current export drive
And basically I'm viable from ten o'clock till five.

(Sir John Betjeman, 1906—, *Executive*, from *The Oxford Dictionary of Quotations*, Oxford University Press, New York, 1980, p. 42, No. 14.)

Integrity

In information assurance, integrity refers to protection against unauthorized modification or destruction of information. Public key infrastructure with digital signature is a prime method of ensuring the integrity of a communication or transmission. Appropriate use of the two types of keys (public and private) and a hash ensures that any change to the transmitted message will be obvious. Integrity is the second element in the information assurance acronym CIANA (confidentiality, integrity, availability, nonrepudiation, and authentication), that itemizes the major factors in computer security. More generically, integrity can refer to the overall quality of an information system and the correctness and reliability of its products. Data integrity can be checked (usually by comparing present versus original checksums). Such tools are available from <http://www.stiller.com/> and <http://www.tripwire.com/>.

My way of joking is to tell the truth. It's the funniest joke in the world. (George Bernard Shaw, quoted by Lawrence J. Peter in *The Peter Prescription*, William Morrow & Co., New York, 1972, p. 8.)

Intellectual Capital

The value created by the use of the human intellect (directly or indirectly). It represents the intangible intellectual assets of an organization and includes human capital, social capital, and corporate capital. Intellectual capital is the essence of KM at the Department of the Navy (adapted from *Glossary of IM/IT & KM Terms*). Intellectual capital can be implicit (tacit) or explicit. It includes corporate memory. Enterprises lose intellectual capital when employees depart from them. They can gain it from formal training (primarily explicit) and on-the-job training (potentially tacit), and special efforts to capture or transfer it (e.g., mentoring, tacit knowledge transfer, etc.).

From Gary Hacker's *HR Metrics News* consolidated from Issues 1-5 (OPM):

Measuring Intellectual Capital: Learning From Financial History by John W. Boudreau and Peter M. Ramstad: <http://www.ilr.cornell.edu/cahrs/PDFs/WorkingPapers/WP96-08.pdf> 6/02. "In this article, we suggest that designers of HR measurement systems can learn from the success of well-accepted measurement models in the financial and marketing arenas. We show that the historical development of these measurement systems suggests several lessons for the HR measures of the future."

Of course I am pleading the cause of the *thinking* man, and, inasmuch as most people do not think, of a small minority. (C. G. Jung, *Letters*, Vol. 2, Bollingen Series 95, 1951-61, Gerhard Adler and Aniela Jaffe, Eds., Princeton University Press, Princeton, NJ, 1953-75, p. 716.)

Intellectual Property (IP); Intellectual Property Center
<http://www.umuc.edu/distance/odell/cip/cip.html>

Tangible products produced by human mind(s) that have the legal status of personal property. These include works protected by copyright, patent, and trademark. Ideas are not intellectual property until they are recorded, published, or publicly manifested in

some form. Most products and documents produced by or funded by the government are not considered the intellectual property of their creators, but are made available to the public (via the Freedom of Information Act) unless access is restricted due to security or privacy concerns. Government contracts usually include intellectual property and data rights clauses. The government does not generally take ownership of data rights, but instead retain government usage rights. This approach is accentuated through the government's dual-use projects, intended to promote products useful to the government and to the creating contractor, which that contractor can use for commercial purposes. Fair practices laws, while complicated, allow reproduction of copyrighted material for certain specific purposes such as: critiques, news, teaching (including multiple copies for classroom use), and video tapings for personal use. The first sale doctrine eliminates the creator's exclusive rights of copying and distributing the material. Software suppliers avoid this problem by licensing their software rather than selling it outright. Use of the software entails the user's agreement not to resell it. Davy Jones locker BBS was sued by Software Publishers association for selling licensed software. Various organizations and techniques are being used to protect IP including MRJ Technology (limiting licenses to one use or copy), Microsoft (analyzing electronic emanations to enforce license agreements), and Cambridge University under Microsoft grant (to develop anti-piracy technology). There is an executive order on computer piracy that directs agencies to adopt procedures to ensure they do not acquire, reproduce, distribute, or transmit software in violation of the copyright. Agencies are to prepare inventories of software, determine software that is authorized for use, and develop record-keeping systems (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

Intellectual Property and Tech Forum BC Law School:

http://www.bc.edu/bc_org/avp/law/st_org/ip/f/index.html.

Why do we often see wise men seeking out the company of the wealthy, but seldom see wealthy men seeking out the presence of the wise? ... because wise men appreciate the true value of wealth, whereas wealthy men fail to appreciate the value of wisdom. (R. Yechiel Ha Rofeh, "Maalos Ha Middos," quoted by Nachmanides in *Iggeres Ha Ramban* in R. Avrohom Chaim Feuer's *A Letter for the Ages*, Mesorah Publishing, Brooklyn, NY, 1989, p. 85.)

Intelligent Agent (IA)

An implementation of artificial intelligence. They perform actions usually done by human assistants. Algorithms can be based on AI techniques such as expert systems, genetic algorithms, or neural networks. An IA is used to find, filter, and fuse information for the user. They can be used to inform the user about new general information (e.g., Point Cast), find specific information (e.g., Company Sleuth), notifying user if Web pages change (e.g., Minder), assisting with shopping (e.g., Excite), helping with KM (e.g., Enfish), improving Web searching (e.g., Ferret), entertaining and answering questions (e.g., askJeeves or Sylvie). Presently IAs are not very smart, however. Their value as virtual human assistants should improve as neural networks are combined with genetic algorithms, etc. See <http://www.botspot.com> (IRMC New World of the CIO Course). <http://www.botspot.com/> (IRMC Critical Information Systems Technologies Course).

Nothing can be believed which is seen in a newspaper ... Advertisements contain the only truth to be relied upon in a newspaper. (Thomas Jefferson, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 164.)

Interface—see Information Systems Integration

A connection between two entities or systems or the process of making such a connection. IT interfaces are used to transfer data between two information systems or between a system and a user. The most common user Interface includes a computer screen with keyboard, where a user can type in data or instructions, often aided by a mouse, with the screen displaying both the input and results of the computer processing back upon the screen. Modems are used to interface computers with the Internet; local area networks are used to interface a set of computers with the system and, thereby, other computers included therein. Interfacing can be created between subsystems within a system or between separate systems; however, it is not as extensive as integrating components and sub-systems into a united system. Interfaces include several aspects: physical or mechanical, electrical or power, electronic or logical, and software or protocols. Various Department of Defense documents describe interfaces for systems designed by or for the government. These include interface design specifications (IDS), weapon systems control interface drawings (WSCID), etc. With the increase in contractor off-the-shelf product usage, most interfaces are now industry standards, such as IEEE RS232 interfaces.

If we want to be heard we must speak in a language the listener can understand and on a level at which the listener is capable of operating ... If we are to love we must extend ourselves to adjust our communication to the capacities of our beloved. (M. Scott Peck, *The Road Less Traveled*, Touchstone Books/Simon & Schuster, New York, 1978, p. 154.)

Intermediation

The process of connecting people to the knowledge, information, and data they require. Practitioners of knowledge intermediation are known as knowledge managers, brokers, intermediaries, and connectors.

A man convinced against his will, is of the same opinion still. (Samuel Butler, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 82.)

International Information Systems Security Certification Consortium (ISC²)—NSTISSI/SANS

A nonprofit organization that administers the Certified Information Systems Security Professional (CISSP) certification program; <http://www.isc2.org/> (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

I won't belong to any organization that would have me as a member. (Groucho Marx, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983 p. 151.)

International Standards Organization (ISO)— <http://www.iso.ch/iso/en/ISOOnline.opennerpage>; see Institute of Electrical and Electronics Engineers

The ISO creates and maintains international standards. For example, the ISO 9000 series of documents define international quality standards. With the present DoD emphasis on commercialization, international industry standards (e.g., ISO standards) have the highest priority. Considerable attention is now focused on developing an international standard for extensible markup language. Standards such as these tend to enable interoperability, as observed in the global use of the World Wide Web. The International Telecommunications Union is another international standards organization (IRMC New World of the CIO Course). See Lewis Gray's "ISO/IEC 12207 Software Lifecycle Processes" (*Crosstalk*, 1996, Vol. 9, No. 8, August, pp. 14–18 <http://stsc.hill.af.mil/CrossTalk/1996/aug/isoiec.html>) (IRMC Advanced Software Acquisition Management Course).

England and America are two countries separated by the same language. (George Bernard Shaw, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 332.)

International Telecommunications Union (ITU)

The ITU, similar to the International Standards Organization, creates and maintains international standards. The ITU, however, specializes in telecommunications standards. It was formerly called the CCITT, Committee for International Telegraph and Telephone. ITU-T-509 is the standard for X.509 digital certificates.

The only alternative to coexistence is co-destruction. (Jawaharlal Nehru, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 502.)

Internet; Internet Indicators <http://www.internetindicators.com>, Internet World <http://www.internetworld.com>

A worldwide system of computer servers from which users at any computer can extract information or knowledge. It is a public, cooperative, and self-sustaining institution accessible to hundreds of millions of people worldwide. It was originally developed by the Defense Advanced Research Project Agency for Department of Defense use but has expanded into the World Wide Web (its primary modern usage). The net is generally accessible through telephone lines, although wireless access is becoming more prevalent. Internet service providers attach users to the Internet. While the Internet is open to all users, particular Web sites may be access controlled by their owners. The Internet is the medium creating the possibility of ebusiness and e-Government. Demographics have been identified for Internet usage: median age, 33; average household income, \$59,000; married, 41 percent; children under 18 at home, 34 percent; college degree, 57 percent; professional, 30 percent (IRMC Managing Networked Security in a Networked Environment Course). See Mark Butler's high level/easy to read *How to Use the Internet* and Harley Hahn's extensive site list *Internet Golden Directory* (IRMC Data Management Strategies and Technologies Course). Internet connectivity must be controlled: whatever is not specifically allowed should be disallowed (e.g., unauthorized or "rogue" modems) in order to protect the network from outside attack. Security personnel can war dial the telephones to look for rogue modems. Modems can also be

automatically disconnected after a period of inactivity (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

If you believe everything you read, better not read. (*Japanese Proverbs*, Peter Pauper Press, Mt. Vernon, NY, 1962, p. 43.)

Internet Protocol (IP)

The set of rules and procedures within transmission control protocol/Internet protocol that governs the breakup of data messages into packets, the routing of the packets from sender to destination network and station, and the reassembly of the packets into the original data messages at the destination (adapted from *Glossary of IM/IT & KM Terms*).

We dissect nature along lines laid down by our native language ... Language is not simply a reporting device for experience but a defining framework for it. (Benjamin Whorf, 1897–1941. *Thinking in Primitive Communities*, in Hoyer, Ed., *New Directions in the Study of Language*, 1964, from *The Oxford Dictionary of Quotations*, Oxford University Press, New York, 1980, p. 571, No. 23.)

Internet Relay Chat (IRT)

Computer channels configured to allow users to perform chat functions. This windows feature is a security risk and has been used by hackers for attacks on systems. Firewalls should be configured to disallow IRT in the network. IRT can be used to establish zombies and facilitate denial of service attacks.

Bliss ungrounded in physical reality is not bliss but delusion. (Bahya ben Joseph Ibn Paquda, *The Book of Direction to the Duties of the Heart*, quoted by Perle Epstein in *Kabbalah—The Way of the Jewish Mystic*, Shambhala, Boston, 1988, p. 4.)

Internet Service Provider (ISP)

A service organization (normally commercial) that provides Internet connectivity and associated services to its customers or users. Examples include: America Online (AOL), CompuServe, Erols, and Earthlink. Locate Internet Service Providers by area code >9,100 <http://www.thelist.com>.

It is the new patterns of looking at the world that are important. These patterns ... turn out to be the growth points of our understanding. It is the search for ever-improving understanding that lures us on, inviting us to supersede existing patterns. (Stephen Denning, *The Springboard*, Butterworth-Heinemann, Boston, 2001, p. 183.)

Interoperability

The ability of systems to exchange services with other systems so as to operate effectively together. Systems that interoperate are independent from each other as opposed to an integrated system with its component sub-systems. However, a super-system or overarching system composed of all interoperating systems can also be envisioned. Similarly, interfacing systems, which merely communicate limited data to each other, are only interoperable in a very generic sense. Thus, a spectrum would go from interfacing to interoperable to integrated in a progression of increasing interdependence. Two 100 percent interoperable systems are, in fact, one integrated

system. Interoperability is a major consideration in systems engineering and Naval Sea Systems Command, for instance, refers to systems engineering and interoperability as SE&I, addressing it as a domain or discipline. In April 1999 the Center for Naval Analyses (CNA) published a study of C⁴ISR (Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance) interoperability with North Atlantic Treaty Organization allies. CNA pointed out that little interoperability presently exists for integrated, common, or multinational, military operations even for technologically developed nations and that, with continual IT advances, the situation was worsening.

Joint Interoperability Test Command (JITC): <http://jitc.fhu.disa.mil>
Office of the Director, Interoperability: <http://www.acq.osd.mil/io/>.

... but the truth is so simple and uncomplicated that it will not be accepted by those whose ways are complicated and who therefore seek for complexity everywhere. (Franz Hartmann, *The Life and Doctrines of Jacob Boehme*, quoted in *Rosicrucian Digest*, June 1973, Vol. LI, No. 6, p. 5.)

Inter-Rater Reliability

A technique for estimating instrument reliability in which ratings are compared from two or more evaluators who use the same form to rate the same set of cases (IRMC Measuring Results of Organizational Performance Course). For best results (true value), one person's ratings must not be available to other raters prior to their submission of their own ratings (i.e., blind ratings must be used, and double-blind ratings are highly recommended). Due to various rater errors, inter-rater reliability may not be high. Also, different raters tend to have different average or mean scores even given the same data and rating scales. Thus, their entire rating structure can be compared in an ordinal or proportional manner to obtain a reasonable measure of inter-rater reliability.

A person always thinks another's psychology is identical with his own. (C. G. Jung, *Civilization in Transition*, CW10, Princeton University Press, Princeton, NJ, 1964, p. 115.)

Intranet— <http://www.cio.com/research/intranet/>

An Internet-like network whose scope is restricted to the networks inside a designated enclave within an organization. A case in point is the Navy/Marine Corps Intranet. An intranet is considered safer than the Internet since all of its components are located within its enclave or firewall system. Outside risk is reduced. However, it is still vulnerable to inside attack—indeed, it can be more vulnerable. However, additional firewalls, intrusion devices, and other strategies are often included within the intranet to reduce risk (single-point failure). In addition, it can be easier to implement additional security methods (e.g., encryption) consistently across the enterprise when a full enterprise intranet exists. Also, more consistent training can be applied as well. See <http://www.intraware.com/> (IRMC Critical Information Systems Technologies Course).

Intranet Journal: <http://www.intranetjournal.com/>
PEO-IT: <http://www.peo-it.navy.mil>
EDS NMCI: <http://www.nmci-isf.com/>.

A certain level of personal intimacy may be necessary to establish comfortable communication of tacit knowledge. Internet-based friendships suggest that intimacy does not depend wholly on physical co-location, but it remains to be seen whether such friendships are based enough in reality to mimic the mutual understanding born of face-to-face encounters. (Dorothy Leonard and Sylvia Sensiper, "The Role of Tacit Knowledge in Group Innovation," *California Management Review*, Berkeley, CA, Spring 1998, Vol. 40, Issue 3, Spring, pp. 112-132.)

Intrusion Detection System (IDS)

An information system security device, particularly important for defense-in-depth approaches, that monitors and analyzes system and network traffic for possible hostile attack or misuse from inside or outside, issues alert of unusual or unauthorized activity, and identifies unauthorized devices (e.g., a dial-up modem). An IDS can be host-based or network-based. A host-based IDS resides on a server, monitors server logs, uses statistical analysis to detect aberrant behavior, is not real-time, has limited access, protects host. A network-based IDS resides as an agent on local area network servers, filters and analyzes in real time, compares packets against an attack signature database, performs pattern or byte-code matching, detects threshold crossing, correlates lesser events, performs statistical anomaly detection, makes alerts and notifications, requires maintenance and updating of database. IDSs do not work alone, but in conjunction with other information security elements. They do not detect all attacks. Vendor technology refresh must be considered in choosing an IDS. An IDS function can also be outsourced (IRMC Managing Networked Security in a Networked Environment Course). Approaches used by leading products include: detect statistical anomalies, use expert systems whose knowledge is derived from human auditors, develop models of intrusion based on past intrusions, develop models based on neural networks, use a composite approach which integrates the results from different approaches (IRMC Assuring the Information Infrastructure Course). BackOfficer Friendly—free intrusion software:

<http://www.nfr.com/products/bof/>.

Nukenabber—free intrusion software for ports:

<http://www.dynamicsol.com/puppet/nukenabber.html>.

"Faith" is a fine invention
When the gentleman can see—
But microscopes are prudent
In an emergency.

(Emily Dickenson, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 91.)

Item Analysis

A process of choosing the best items from a pool of items for use in a measurement instrument on the basis of ratings by judges or results of a tryout of the instrument (IRMC Measuring Results of Organizational Performance Course). This is the technique used to construct questionnaires. The Myers-Briggs Type Indicator (MBTI), for instance, used an empirical technique to select and test items for inclusion in the instrument.

Creativity emerges from individuals finding or being given opportunities to work at their full level of capability..Work becomes uncreative when people are underemployed, that is to say, when the level of work they are doing is beneath that which they could do. And unfortunately in our industrial society, far too many people are either underemployed, or if employed, then underutilized. (Elliott Jaques, *Creativity and Work*, International Universities Press, Inc., Madison, CT, 1990, p. vii.)

Item Pool—see Item Analysis

A large number of preliminary items developed for a measurement instrument from which the final items will be selected (IRMC Measuring Results of Organizational Performance Course).

Unfortunately, most management interventions emphasize shared vision and process skills that help create a harmonious environment but do little to educate team members about each other's skills and abilities. (Rob Cross and Lloyd Baird, "Technology is Not Enough: Improving Performance by Building Organizational Memory," *Sloan Management Review*, Spring 2000, Vol. 41, No. 3, MIT reprint No. 4135, Cambridge, MA, p. 74.)

J

Java (Applets)—see Common Object Request Broker Architecture (CORBA), Mobile Code, and Webification

Java is a platform independent and security aware programming language developed by Sun Computers. Java's mini-applications or programs are called applets. Java is an interpreted object-oriented language similar to C++. It runs on any platform supporting a Java interpreter (Java Virtual Machine). The applets are written in a machine-independent code called "byte code." They are dynamically downloaded from a Web server to "just in time" fat clients. Applets can talk directly to an application server or database via network protocols (e.g., Java Database Connectivity, JDC). Its security is based on its byte code verifier. The byte code is interpreted by your browser to run on your computer, but before executing it, the verifier ensures that the code has the proper structure (not corrupted by a hacker) <http://www.sun.com/java/>. Java also employs a sandbox that is a Java Virtual Machine (JVM) with applets running and serves as a virtual proxy—to enhance security. Java is a type of mobile code. Java has GUI potential via Sun's Abstract Windowing Toolkit (AWT), Sun's Java Foundation Classic (JFC) that enhances AWT, Netscape's Internet Foundation Classes (IFC) which also enhances AWT, and JavaBeans, whereby developers can create their own components that can be customized by GUI builders. See Andrew Patzer's "Using Java in a Distributed Environment" (see his book, *Professional Java Server Programming: with Servlets, JavaServer Pages (JSP), XML,...* Perfect Paperback, 1999). "Java starts where CORBA leaves off. CORBA deals with network transparency, while Java deals with implementation transparency" (*BYTE Magazine*, October 1997). However, for pure Java-to-Java communication, interface definition language (IDL) may not be necessary, since Visigenic's Caffeine creates stubs and skeletons without IDL and Java's Remote Method Invocation (RMI) use Java Virtual Machine facilities to communicate with objects without using CORBA (IRMC Data Management Strategies and Technologies Course).

All software changes are minor until you make them. (Donato M. Russo, Naval Air Development Center, Warminster, PA, May 15, 1974.)

<http://www.pinnaclepublishing.com/IE/JEmag.nsf/FreeTipsIndex!openform>
<http://www.december.com/works/java/books.html>
<http://java.sun.com/>
<http://www.gamelan.com/>
<http://members.aol.com/lpang10473/javaap.htm>.

Joint

In military parlance, joint describes a product, activity, etc., with participants from more than one military service. While there are three military departments (Air Force, Army, and Navy) in the United States, there are four military services (Air Force, Army, Marine Corps, and Navy). The strong efforts to promote jointness in the military have resulted in, for instance, the issuance of *Joint Vision 2010* and *Joint Vision 2020*, as well as

the creation of joint programs such as the Defense Integrated Military Human Resources System (DIMHRS), which includes all four military services.

During my second month of nursing school, our professor gave us a pop quiz. I was a conscientious student and had breezed through the questions, until I read the last one: "What is the first name of the woman who cleans the school?" Surely, this was some kind of joke. I had seen the cleaning woman several times. She was tall, dark-haired and in her 50s, but how would I know her name? I handed in my paper, leaving the last question blank. Just before class ended, one student asked if the last question would count toward our quiz grade. "Absolutely," said the professor. "In your careers, you will meet many people. All are significant. They deserve your attention and care, even if all you do is smile and say 'hello.'" I've never forgotten that lesson. I also learned her name was Dorothy. (Received via Internet e-mail; used here as an illustrative story.)

Joint Technical Architecture (JTA)—http://www-jta.itsi.disa.mil/jta/jtav2_dnld.html
(IRMC Assuring the Information Infrastructure Course)

A Department of Defense (DoD) set of standards governing the arrangement, interaction, and interdependence of system parts or elements to ensure that a conformant system satisfies a specified set of standards. Formerly referred to as the lowest level architecture of the three levels of the DoD IT architecture, it is now referred as the lowest view of the three views of that architecture. The JTA replaces the DoD Index of Specifications and Standards (DoDISS) as part of the acquisition reform initiative that cancelled almost all military and DoD specifications and standards as part of the move to commercial standards and purchases. The JTA, while useful, is a misnomer; it is not an architecture. It is more like a building code. It can increase potential interoperability by limiting the set of standards from which selection can be made. It includes logical interface standards and protocols for information transport, content, format, and processing. The main document contains generic standards and appendices contain domain-specific standards in areas such as weapon systems, modeling and simulation, and command, control, communications, computers, intelligence, surveillance, and reconnaissance (C⁴ISR). The JTA includes emerging standards but not legacy standards. The order of precedence is: international industry standards (e.g., International Standards Organization), national industry standards (e.g., American National Standards Institute or Institute of Electrical and Electronics Engineers), government standards, and (worst case) DoD standards, unless required for a valid national security interests (IRMC New World of the CIO Course). The JTA is essentially an implementation (subset) of TAFIM and meets TAFIM requirements.

Golub's Law: ... projects progress quickly until they are 90 percent complete, and then they remain 90 percent complete forever. (Alan J. Driscoll, "Software Visibility and the Program Manager," *Defense Systems Management Review*, Spring 1977, Vol. I, No. 2, quoted by Gohn A. Grooby in "Maximizing Returns on EDP Investments," *Data Management*, September 1972, p. 17.)

Navy JTA: <http://www.csc.com/jta>

TAFIM—See the *DII Master Plan*: <http://vsearch.dtic.mil/search97/s97is.vts?action=View&VdkVgwKey=http%3A%2F%2Fwww%2Edisa%2Emil%2Fdiimp>

[%2Fdiimp%2D2%2Ehtml&DocOffset=2&DocsFound=64&QueryZip=%3Csum%3E%28%5B%2E90%5D%28%3CMany%3E%3CStem%3E%60TAFIM%60%29%2C+%5B%2E10%5D%28%3CYesNo%3E%28%28%3CMany%3E%3CStem%3E%60TAFIM%60%29+%3CIn%3E+%60title%60%29%29%29&Collection=disa&SortField=Score&SortOrder=Desc&ftp://198.4.59.6/pub/library/policies/tafim/](http://198.4.59.6/pub/library/policies/tafim/?%2Fdiimp%2D2%2Ehtml&DocOffset=2&DocsFound=64&QueryZip=%3Csum%3E%28%5B%2E90%5D%28%3CMany%3E%3CStem%3E%60TAFIM%60%29%2C+%5B%2E10%5D%28%3CYesNo%3E%28%28%3CMany%3E%3CStem%3E%60TAFIM%60%29+%3CIn%3E+%60title%60%29%29%29&Collection=disa&SortField=Score&SortOrder=Desc&ftp://198.4.59.6/pub/library/policies/tafim/).

Judgment Sampling—see Threats to Acceptance and Face Validity

A subgroup of the population is chosen on the belief that it is representative of the full population, without empirical verification (IRMC Measuring Results of Organizational Performance Course).

I always advise my patients not to cherish the naïve belief that what is of the greatest significance to them personally also has objective significance. (C. G. Jung, *Two Essays on Analytical Psychology*, CW7, Princeton University Press, Princeton, NJ, 1966, p. 220.)

K

Key Pair—see Public Key Infrastructure (PKI)

Two keys which decrypt each other. Key pairs are used in asymmetric encryption (as opposed to symmetric encryption in which only one key is used to encrypt and decrypt). One key is labeled as an individual's public key because it is distributed publicly—usually through digital certificates. The other key is labeled as an individual's private key because it is kept secret by its owner. PKI is a form of asymmetric encryption that will be used in the Navy/Marine Corps Intranet. Originally, pretty good privacy (PGP) used symmetric encryption, but its newer version has asymmetric encryption and so utilizes key pairs. In asymmetric encryption, a sender encrypts a message with the recipient's public key but signs (via digital signature) the message with his or her own private key. Similarly, the recipient decrypts the message with his or her private key and decrypts the signature with the sender's public key.

YGIAGAM: Your Guess Is As Good As Mine. (Fred Nathanson, *Radar Design Principles*, McGraw-Hill, New York, 1969, p. 158, figure 5-11d.)

Key Management Infrastructure (KMI)

The process used to manage the entire life cycle of digital certificates (containing public keys). (cf. PKI). Potential problems with PKI certificate/key management include the unavailability of a user's private key, so that an organization cannot decrypt important information. From a life-cycle perspective, keys can expire, employees retire or expire, archived data may need to be resurrected, etc. Key escrow and recovery schemas have been developed to address such difficulties. An escrow agent can retain copies of an organization's employees' private keys, but this greatly increases risk and creates a single-point failure itself. Alternately, two escrow agents can each retain half of the employees' keys that are unusable unless combined later to generate the private key. Under an alternative key recovery scheme, for each transmission, the two parties each combine their private key with the other party's public key to create a session key which is encrypted with the escrow authority's public key and sent to the escrow authority. The parties then exchange data via the session key. The session key can only decrypt this particular transmission, limiting exposure of the employee's private key. The schema is executed in the background (invisible to users). The escrow authority's private key is still a single point failure for prior transmissions and, therefore, a risk factor (IRMC Advanced Information System Acquisition Course). See "The Risks of Key Recovery, Key Escrow, and Trusted Third Party Encryption" (Hal Abelson), a report by an ad hoc group of cryptographers and computer scientists (Center for Democracy and Technology 1998 <http://www.cdt.org/crypto/risks98>) (IRMC Assuring the Information Infrastructure Course).

Time and tide wait for no man. (Geoffrey Chaucer, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 245.)

Knowledge

The ideas, understanding, and lessons that an organization has learned over time. This knowledge may be specific to the organization that created it. Knowledge is condensed information with context that has value for decision and action. Knowledge can be explicit (generally written down in some form or other) or implicit/tacit (only available in people's minds and difficult or impossible to extricate). Knowledge is at a higher level of abstraction than information or data and is more easily understood. Wisdom is considered a higher level of abstraction still. In the state of flow, information is readily translated into knowledge and action in a tacit manner. In the words of Dave Bennet, "Knowledge shared is power squared." One of the main precepts of KM is that sharing knowledge benefits everyone. Knowledge is like a candle flame: sharing it with others (lighting their candles) does not diminish one's own knowledge, but increases the light for all to see.

One piece of knowledge ... is better than prostrating oneself in prayer a hundred times. (The Prophet Mohammed, quoted by Idries Shah, *Thinkers of the East*, Arkana [Penguin], New York, 1971, p. 179.)

Knowledge Base (KB)—see Database

Stored knowledge of individuals within an organization that can be accessed by others. An instrument for knowledge sharing and utilizing lessons learned. Modern knowledge bases tend to be multimedia, employing such entries as videotaped interviews, PowerPoint slides, streaming video, Microsoft Word, etc. Often the term "database" is still used when entries are actually information or knowledge.

In the end men love better that for which they have made sacrifices than that through which they have enjoyed pleasures. (Lord Samuel, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall Inc., Englewood Cliffs, NJ, June 1961, p. 346.)

Knowledge Brokering—see Analogic Thinking

The transferring of either tacit or explicit knowledge from providers to those with a specific need. Unlike connecting, brokering implies a quid pro quo (though this may be implicit). Thus, brokering is similar to selling or marketing. Thus, knowledge brokering is antithetical to the generalized reciprocity envisioned for the knowledge-centric organization of the future. It is more appropriate for vertical organizations with competitive versus cooperative atmospheres or cultures.

We see only the actions of other people, but we judge ourselves by our intentions. Our intentions are usually much better than our actions. We could improve our world if we would take the trouble to find out the intentions of others, and consider their actions in the light of their intentions. (Celia Luce, "Intentions and Actions," *Relief Society Magazine*, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 354.)

Knowledge Centric

An organizational ability to jointly leverage personnel and technology, to create knowledge, and to quickly deliver resulting insights, to the right persons, at the right time, to solve problems, and exploit opportunities. See knowledge-centric organization (KCO) and KCO CD or toolkit.

Our function as human beings is to increase our expertise and to become so human that we see ourselves in all other people. (Gerard I. Nierenberg and Henry H. Calero, *How to Read a Person Like a Book*, Hawthorne Books, New York, 1971, p. vii.)

Knowledge-Centric Organization (KCO)—cf. KCO CD

An organization that organizes around its critical knowledge needs and then builds useful and relevant methods and processes to fill those needs. This resulting organization is an overlay to the existing organizational structure such that personnel integrate knowledge sharing into their everyday lives. By providing access to the breadth of organizational knowledge, members can quickly and accurately draw upon critical lessons learned to work more efficiently and effectively. Activities will then satisfy the dictum to work faster, better, cheaper, and most important, the organization can coherently pursue knowledge superiority.

The sentiments of almost every executive who participated in this study echo those of Drucker: that leveraging organizational knowledge is not only important, but it may be the most important job management has. (Rudy Ruggles, "Knowledge Management in Practice," *California Management Review*, Berkeley, CA, Spring 1998, Vol. 40, Issue 3, pp. 80–89.)

Knowledge-Centric Organization (KCO) Toolkit (KCO CD or KCO Toolkit)

Available from the DON CIO in CD format. The new version 2.0 includes the case-based reasoning (CBR) tool developed at the Naval Research Laboratory to assist users in finding information and knowledge they are seeking. The toolkit includes a measured method of implementing a KCO as well as a wealth of KM resources including an extensive library of embedded documents, a large list of applicable Web sites, explications of numerous available tools, books, articles, etc. It is intended as a site for one-stop shopping for performing KM within organizations.

The only person you can change is yourself ... attempts to convert others tend toward chaos and away from community. (M. Scott Peck, *The Different Drum*, Simon & Schuster, New York, 1987, p. 185.)

Knowledge Champion

A person who champions KM within an organization. Knowledge champions act independently to instill the principles of KM, create a knowledge-oriented culture, establish a knowledge infrastructure, and promote the creation and use of knowledge throughout the organization. Chief knowledge officers (CKOs) should certainly be knowledge champions, but they should not be the only ones. The Knowledge Management Community of Practice, for instance, includes representatives from numerous federal agencies and facilities, many of whom are knowledge champions

within those organizations. It is important for knowledge champions to interact, thus performing KM in the arena of KM—second-order KM. Chief information officers (CIOs) are frequently advised to interface with operating executives within their organization in order to elicit the needs of their departments and employees. By attuning to and addressing such needs, a CIO can gain important credibility within the organization. Similarly, CKOs must do the same—converting organizational leaders and executives into knowledge champions. Stephen Denning's book, *The Springboard*, describes how he used stories to sell KM to the World Bank. He depicts how the president of the bank metamorphosed into a knowledge champion.

Only an "r" separates "impotence" from "importance"—which r you? (Neal Pollock, February 22, 1998.)

Knowledge Community Leader (KCL)

A person who facilitates communities of practice to foster innovation, improved performance, and collaboration; this requires facilitation skills to ensure change initiatives are supported. Similar to CKOs, KCLs are inherently knowledge champions—but with a specific function to perform within the specific community. Nevertheless, as knowledge champions, KCLs can exert valuable influence beyond the domain of their community.

Wisdom outweighs any wealth. (Sophocles, *Antigone*, 1.1050 ode III, from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 82b.)

Knowledge Density (KD)—see Data Density and Information Density

The percentage of knowledge in a verbal communication (oral, written, or electronic). Human communications may include knowledge, information, and or data (KID) in varying proportions (each being inversely proportional to the others since it is a zero sum game). Thus, each communication has a data density, information density, and knowledge density (though some may be zero for a specific communication). They form a distribution that varies for each instance. Nevertheless, there are trends peculiar to individuals (as well as types of communications). Thus, some individuals may usually exhibit high or low knowledge densities. Such characteristics reflect both nature and nurture, depending upon individual Myers-Briggs types, training, experience, etc. Mismatches between people oriented towards higher or lower KDs can result in miscommunications, boredom, anger, confusion, and other dysfunctional results. KD can be modified by individuals who recognize the process in which they are engaged and who take responsibility for managing this process. KD can be a major factor in time management, and can greatly affect team efficacy and efficiency of operations. A useful rule of thumb is to ask whether informational content is necessary and sufficient to the listener or audience.

It is generally the communicator's responsibility to tailor the communication to the target audience. Such disconnects can frequently be observed in work groups. Indeed, some individuals may be avoided (though they may have valuable input to contribute) due to differing KD. KD differs from (but relates to) data rate. For example, the total data transmitted is the product of data density and data rate (the way they are defined here). Of course, if all that is communicated is data (data density = 1.0 or 100 percent), then the

data rate implies the total data. Similarly, the total knowledge (or information) transmitted would be the knowledge rate (basically, the data rate using the broad definition generally in use today where data includes information and knowledge from a totally technical versus human perspective) multiplied by the KD.

We do not talk—we bludgeon one another with facts and theories gleaned from cursory readings of newspapers, magazines, and digests. (Henry Miller, "The Shadows," *The Air-Conditioned Nightmare*, 1945, from *The International Thesaurus of Quotations*, Rhoda Thomas Tripp, Harper & Row, New York, 1970, p. 112, entry 185, No. 25.)

Good communication is stimulating as black coffee, and just as hard to sleep after. (Anne Morrow Lindbergh, "Argonauta," *Gift from the Sea*, 1919, p. 41, from *The International Thesaurus of Quotations*, Rhoda Thomas Tripp, Harper & Row New York, 1970, p. 93, entry 148, No. 9.)

Knowledge Elicitation—see Tacit Knowledge Transfer

- 1) The process of interrogating an expert to elicit (and later codify) his or her tacit knowledge. The knowledge elicited is then incorporated into a knowledge repository.
- 2) A technique used to create a rule base of an expert system.

I asked you what time it is, and you told be how to build a clock. (Gordon Braudaway, IBM, quoted by CAPT Gerald Jones, PMA264, NAVAIR, March 11, 1977.)

Knowledge Hoarding—see Collaboration

A resistance to share knowledge in an organization or company. This resistance generally arises from a belief that the ownership of knowledge constitutes power. This may be based upon the belief in supply and demand, whereby items in short supply have increased value (USA). However, Alex Bennet has argued the opposite position, that "Knowledge shared is power squared." The basic difference lies in the opposing values of competition (classical or Keynesian economics) and cooperation. Such a set of simultaneously opposing principles tends to create a normal distribution that has a local maximum (or minimum). There should, therefore, be an optimal point to the amount of knowledge shared versus unshared. This assumes a zero sum game—in which an individual, for example, has a limited amount of time available. Sharing knowledge tends to increase value for the organization, but decreases the amount of time an individual has to perform other work. Thus, a happy medium is to be sought. Knowledge networks or expertise locator systems face the same situation if staffed by people for whom supporting the system is collateral duty—not their main job. They must balance the set of tasks that represent their jobs or positions within the organization. This balancing problem is exacerbated by organizations that do not walk the talk regarding knowledge sharing and management.

The trouble with the world is that the stupid are cocksure and the intelligent full of doubt. (Bertrand Russell, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 250.)

He that is good for making excuses is seldom good for anything else. (Benjamin Franklin, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 340.)

Knowledge, Information, and/or Data (KID)

Also referred to as DINK. This term emphasizes the importance and value of knowledge over information or data. No kidding!

Information is only a means of insight, and in itself of little or no value; that it is his way of thinking that makes a man a philosopher ... With by far the largest number of learned men, knowledge is a means, not an end. (Arthur Schopenhauer, quoted by Ralph M. Lewis in *The Immortalized Words of the Past*, Ancient Mystical Order Rosae Crucis, San Jose, CA, 1986, p. 236.)

Knowledge Intermediation

The process of linking disparate knowledge providers with knowledge users, both inside and outside of the organization. Knowledge intermediaries can help users assess and clarify their knowledge needs, proactively capture and disseminate knowledge, and maintain the accuracy and relevance of the knowledge base. Knowledge intermediation is a crucial and desired capability of all knowledge workers in the development of an effective knowledge-centric organization. In the oil drilling industry, for instance, it cost \$30,000 per day for a drilling team to await the answer to a drilling problem from headquarters. One company's response was to set up a communications link to a knowledge intermediary who would determine the nature of the problem and refer it to the appropriate expert within the company. These experts were networked, preassigned, and briefed so that they provided high priority to such requests. After implementation of this system, the response times were reduced from a range of three days to three weeks prior to implementation down to an average of three hours. This saved the company millions of dollars. Knowledge managers, workers, and brokers perform knowledge intermediation functions.

Bodily exercise, when compulsory, does no harm to the body; but knowledge which is acquired under compulsion obtains no hold on the mind. (Plato, *The Republic*, 536-E from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 94b.)

Knowledge Inventory

The systemic identification of an organization's knowledge. Since such knowledge is often tacit, the inventory may often be "pointers to people" rather than knowledge itself. A knowledge network is a system designed to tap the living component of this knowledge inventory in a near real time way. A knowledge repository provides a means for capturing explicit (and sometimes tacit) knowledge for non real time access.

Learning is finding out what you already know. (Defense Systems Management College, Manufacturing Management Department Quote of the Day No. 4.)

Knowledge Management (KM)

1) The management of knowledge—applying the principles of management to the generation, codification, storage, distribution, and re-use of knowledge. KM attempts to

make conscious the processes that humans have been employing since the primeval French cave walls were drawn upon with petroglyphs and pictographs, and to update those processes with modern technology and psychology. People generally learn consciously and explicitly, either through personal experience (the hard way or School of Hard Knocks) or from other people (the easy way through training, mentoring, apprenticing, reading, etc.). KM attempts to build upon the former to enhance the latter, so as to create a more cost-effective knowledge organization. In parallel, unconscious, tacit knowledge is generally learned personally (through intuition, hunches, attunements) or collectively (through one's culture, rituals, ceremonies, and shared experiences of a less-defined nature). KM also attempts to delve into tacit knowledge through stories, interviews, conversations, and other informal means.

2) The process for effectively applying intellectual capital (human, social, and organizational) to enable faster, better organizational decisions. The means used can be nonreal time, near-real time, or real-time, depending on need. Tools, such as decision support systems, can provide content to decision makers faster and more coherently but cannot actually effect decision making by themselves. According to Thomas Davenport and Lawrence Prusak, in *Working Knowledge*, the original intention of using expert systems to replace human thought and decisions has itself been replaced by the use of such tools as case-based reasoning to augment and facilitate human decision making.

KM can be viewed as an interface or cusp between human psychology and process and (information) technology, though it has been characterized as two-thirds human and one-third technology (at most). As Gerry Gingrich (IRMC) wrote (quoting Pascal), "The Heart has its Reasons that Reason does not Know" (*Journal of End User Computing*, Vol. 7, No. 1, Winter 1995) and Arno Penzias wrote "Computers manipulate symbols and numbers; only humans use experience to connect them to meaning" (*Ideas and Information*, Simon & Schuster, New York, 1989) (IRMC Leadership for the 21st Century Course). For employing KM in acquisition and program management, see <http://www.dau.mil/pubs/arq/arq2002.asp#Winter>; <http://www.dsmc.dsm.mil/pubs/pdf/pmpdf01/so-pol.pdf> for answers to FAQs.

IT/KM/eC tools: <http://www.microsoft.com/indonesia/enterprise/km.asp>

Interdepartmental KM forum (Canada): http://groups.yahoo.com/group/ikmf_figs

Customer Knowledge Management: <http://www.destinationcrm.com/articles/default.asp?ArticleID=2295&Keywords=Knowledge++AND+Management>.

Academic Centers

California Management Review:

<http://www.haas.berkeley.edu/News/cmr/index.html>

Carnegie Bosch Institute: <http://cbi.gsia.cmu.edu/>

Knowledge Ecology Certificate Program-George Mason University:

<http://www.knowing.org/ke/index.html>

KM The George Washington University: <http://www.km.gwu.edu/>

KM University of Texas at Austin: <http://www.bus.utexas.edu/kman/>

University of Texas Case Study: Teltech:

<http://www.bus.utexas.edu/kman/telcase.htm>

KM Exchange University of Kentucky:
<http://www.uky.edu/BusinessEconomics/dssakba/kmexch.htm>
Public Library Stanford University: <http://www.ksl.stanford.edu/knowledge-sharing/README.html>
University of Albany: <http://www.albany.edu/faculty/pm157/teaching/topics/orglearn.html#organizations>
<http://www.scd.ucar.edu/info/KDI/KDIworkshop.html>
National Defense University: <http://www.nduknowledge.net>.

KM News and Publications

Charting a KM Course:
http://www.computerworld.com/cwi/story/0,1199,NAV47_STO48722,00.html
Knowledge versus information: <http://ericacve.org/docs/mr00009.htm>
KM World: <http://www.kmworld.com>
KM Consortium International: <http://www.kmci.org/>
KM Magazine: http://www.destinationcrm.com/km/dcrm_km_article.asp?id=907
KM News: <http://www.kmnews.com>.

KM Related Portals

Buckman Laboratories Website for KM: <http://www.knowledge-nurture.com/>
Collaborative Strategies: <http://www.collaborate.com/>
KMTool: <http://www.kmtool.net/index.htm>
Knowledge Markets Meta Portal Kaieteur Institute for KM:
<http://www.kikm.org/portal/index.htm>
The KM Resource Center: <http://www.kmresource.com/>
Level Best Consulting: <http://www.levelbest.net/>
Content Management: <http://www.psgroup.com>
Teleos Knowledge Business: <http://www.knowledgebusiness.com>
Sopheon (formerly Teltech): <http://www.sopheon.com/>
http://www.cio.com/archive/rc_mdium.htm

KM Research Centers, Institutes, and Forums

American and International Standards Development: <http://www.kmstandards.org/>
American Productivity and Quality Center (APQC):
<http://www.apqc.org/km/eKnowledgeCenter.com>
<http://www.eknowledgecenter.com/index.shtml>
CIO Magazine's KM Research Center: <http://www.cio.com/forums/knowledge/>
Gartner Group: <http://www.gartner.com>
Global Business Network: <http://www.gbn.org/>
Global Knowledge Economics Council (GKEC): <http://www.gkec.org>
Institute for KM IBM: <http://ikm.ihost.com>
The Information Economy: <http://www.sims.berkeley.edu/resources/infoecon/>
The Kaieteur Institute for KM: <http://www.kikm.org/>
Knowledge Markets Meta Portal: <http://www.kikm.org/portal/index.htm>

Knowledge Markets Meta Portal Resources:

<http://www.kikm.org/portal/resources.htm>

e-Knowledge Markets Meta Portal: <http://www.kikm.org/portal/page2.htm>

e-Knowledge Markets Meta Portal Abstracts:

<http://www.kikm.org/portal/page22.htm>

KM Forum: <http://www.km-forum.org>

Knowledge Associates International: <http://www.knowledgeassociates.com/>

Knowledge Connections David Skyrme Associates: <http://www.skyrme.com/>

Knowledge Garden: <http://www.co-i-l.com/coil/knowledge-garden/index.shtml>

Knowledge Inc.: <http://www.knowledgeinc.com/>

Knowledge and Innovation Management Professional Society (KIMPS), nonprofit international organization for development of communities of practice and interest:

<http://www.ckimps.org/>

Knowledge Management Certification Board (KMCB):

<http://www.kmcertification.org/>

The KM Consortium International: <http://www.kmci.org/>

KM Professional Organization (KMpro): <http://www.kmpro.org> at support@kmpro.org—KM certifications

KM Review Melcrum Online: <http://www.melcrum.com/>

KM Virtual Library Community Forums, Articles, Magazines, Events, Resources, Analyses and News: <http://www.brint.com/km>

Knowledge Research Institute: <http://www.knowledgeresearch.com>

Knowledge Science and Technology Institute: <http://www.kmuniversity.org/>

The Mitre Advanced Technology Newsletter:

http://www.mitre.org/pubs/edge/april_00

NetAcademy on Knowledge Media: <http://www.knowledgemedia.org:/>

Sveiby KM: <http://www.sveiby.com.au>

The Technology Cooperation Program (international): <http://www.dtic.mil/ttcp/>.

Tools for KM

Business Transformation Book Café: <http://www.vision-nest.com/btbc/>

Center for Business Knowledge Ernst & Young:

<http://www.ey.com/global/gcr.nsf/US/Overview> -

[Center for Business Knowledge - US - Ernst & Young LLP](http://www.ey.com/global/gcr.nsf/US/Overview)

The Change Project: <http://www.well.com/user/bbear/index.html>

Delphi Group: <http://www.delphigroup.com/splash.html>

EKnowledgeCenter (certification programs, expert networks, knowledge resources, and electronic publishing services): <http://www.eKnowledgeCenter.com>

Enlisting Management Support for Change: Storytelling as a Springboard Steve

Denning: <http://www.stevedenning.com/>

Executive Resource on Knowledge, Technology and Performance Knowledge Inc.:

<http://www.webcom.com/quantera/welcome.html>

Federal CIO Council's KM (USA Knowledge): <http://www.km.gov/>

Integrated Diagnostic System (IDS)—Overview: http://ai.iit.nrc.ca/IR_public/ids/

KM Vocabulary—A basic list of generic KM vocabulary:

<http://www.geocities.com/ResearchTriangle/Campus/4150/kmvocab.htm>

Knowledge Communities International: <http://www.kcindex.com/>

KM in the DON CIO: <http://www.don-imit.navy.mil/interestareas.asp>

A Strategy Guide to KM:

<http://www.harvardcomputing.com/Knowledge/knowledge.html>

Some Principles of KM: http://www.strategy-business.com/search/archives/?textfield=%22Some+Principles+of+Knowledge+Management%22&keywd=any&issue_after=&issue_before=&x=58&y=6.

Truths cannot be taken on trust. They need to be continually rediscovered and formed afresh if they are to retain their spiritual content, their life and nutritive value. It is a law of spiritual growth that the same truths must be continually experienced and thought through in new forms. (Lama Govinda, *A Living Buddhism for the West*, Shambhala Boston, 1990, p. 36.)

Knowledge Management Taxonomy—see Taxonomy

A taxonomy is a structured set of names and descriptions used to organize sources in a consistent way. A typical taxonomy uses a logical arrangement but doesn't account for users' particular decision-making and action-taking needs. A KM taxonomy focuses on enabling efficient and interoperable retrieval and sharing of data, information, and knowledge across the enterprise by building in natural workflow and knowledge needs in an intuitive structure (Technology Intelligence International, Burke, VA, 703-764-1903, techi2@techi2.com – <http://www.techi2.com> in the KM taxonomy draft brochure).

There are four types of men in the world:

The man who knows and knows that he knows; he is wise, so consult him.

The man who knows, but doesn't know that he knows; help him not forget what he knows.

The man who knows not and knows that he knows not; teach him.

Finally, there is the man who knows not but pretends that he knows; he is a fool, so avoid him.

(Ibn Gabirol, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 188.)

Knowledge Map—see Information Map and Expertise Locator

A knowledge map is a method of (tool for) locating knowledge within an organization. It is similar to an information map except that it addresses knowledge vice information. Thus, it can be a pictorial (or other type) representation of a knowledge network. The sources and repositories of knowledge can be quite different than those for information or data. Authoritative data sources, for instance, do not generally provide knowledge. Presently, only people are capable of converting information into knowledge, though various tools can assist in this process. Thus, a knowledge map will point to people or to knowledge that has been created by people. Since knowledge is time-limited (decays over time) as do data and information, people tend to be the primary source—unless a knowledge base is maintained on a frequent basis. Similarly, considering rapid turnover in personnel as well as in knowledge, a knowledge map must be maintained

regularly and systematically to remain of value to the organization. Cutting-edge knowledge can be explosive, but it can also have a short half-life.

In addition to cataloging organizational knowledge, knowledge maps can be used to track sources of knowledge within the organization (Andrew Gold, "Knowledge Management: An Organizational Capabilities Perspective," *The Journal of Management Information Systems*, Summer, 2001, pp. 48–58). Knowledge maps have been defined as the "visual display of captured information and relationships that enable the communication and learning of knowledge by observers with differing backgrounds at multiple levels of detail. The individual items of intellectual capital included in such a map can be text, stories, graphics, models, or numbers. Maps can also serve as links to more detailed knowledge sources, as well as pointers to implicit knowledge such as experts." (*Knowledge Management: The Catalyst for Electronic Government*, Raymond Barquin and Alex Bennet, Eds., Management Concepts, Vienna, VA, 2001 [USA]).

I am not young enough to know everything. (James M. Barrie, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 284.)

Knowledge Network International KM Network <http://kmn.cibit.nl/ab/siteEngels.nsf>

A knowledge network is a network or assembly of interconnected nodes arranged coherently to facilitate knowledge flow. It addresses a predefined domain or set of domains. The nodes are generally practitioners in that domain. For example, the Naval Facilities Engineering Command (NAVFAC) created a cadre of technical discipline leaders (TDLs) for each of its approximately 30 technical disciplines. These people became the primary nodes in their knowledge network. Each TDL, however, is supported by a community of practice within his or her technical discipline. These practitioners became secondary nodes within the network. Questions, problems, challenges, opportunities, etc., can readily be shared with appropriate personnel within the knowledge network. As described, a knowledge network is inherently synergistic with communities of practice. Indeed, the set of TDLs formed a cross-discipline overarching community of practice for building facilities. Such a group can then address interface, interoperability, and integration type issues from an interdisciplinary perspective. Of course, outputs can also be captured for a knowledge repository.

Speak to everyone in accordance with the degree of his understanding. (The prophet Mohammed, quoted by Idries Shah, *Tales of the Dervishes*, E. P. Dutton & Co., New York, 1970, p. 38.)

Knowledge Portals—see Web Sites

Web sites that integrate the most relevant information into a single point of access, helping employees to easily find answers and share knowledge with each other and with customers and other stakeholders. Portals allow such knowledge to be located, catalogued, transferred, and maintained for re-use by employing technology to enable sharing, storage and retrieval (USA).

The wisdom of the wise and the experience of the ages are perpetuated by quotation. (Benjamin Disraeli, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983 p. 197.)

Knowledge Repositories

Collections of knowledge “nuggets,” considered as best practices and lessons learned (reviewed for quality and validity) and organized for easy access by users. They are usually collected within a specified domain. The Space and Naval Warfare Command Systems Center Charleston (SSC-CH), for instance, concerned about the “brain drain” in the area of business development, conducted videotaped interviews with knowledgeable personnel. The tapes were edited to create a set of short, pithy knowledge nuggets of only a few minutes length, suitable for indexing and quick viewing by other employees.

The world is huge and there is not one theory only to explain everything. (C. G. Jung, *Analytical Psychology, Its Theory and Practice*, Pantheon Books (Random House), New York, 1968, p. 143.)

Knowledge Spirals

Explicit elements are objective, rational, and created in the “then and there,” while the tacit elements are subjective, experiential, and created in the “here and now.” Ikujiro Nonaka and Hirotaka Takeuchi use this distinction to explain how an interaction between the two categories forms a knowledge spiral: Explicit knowledge is shared through a combination process and becomes tacit through internalization; tacit knowledge is shared through a socialization process and becomes explicit through externalization. (See Dorothy Leonard and Sylvia Sensiper, “The Role of Tacit Knowledge in Group Innovation,” *California Management Review*, Berkeley, CA, Spring 1998, Vol. 40, Issue 3, pp. 112-132.)

Know-how embraces the ability to put know-what into practice. It is a disposition, brought out in practice. Thus, know-how is critical in making knowledge actionable and operational. A valuable manager, for example, is not simply one who knows in the abstract how to act in certain circumstances, but who in practice can recognize the circumstances and acts appropriately when they come along. That disposition only reveals itself when those circumstances occur. Such dispositional knowledge is not only revealed in practice. It is also created out of practice. That is, know-how is to a great extent the product of experience and the tacit insights experience provides. (John Seely Brown and Paul Duguid, “Organizing Knowledge,” *California Management Review*, Berkeley, CA, Spring 1998, Vol. 40, Issue 3, pp. 90-111.)

Knowledge Superiority (KS)

Knowledge superiority means creating, obtaining, and utilizing knowledge better than one’s adversary. *Joint Vision 2020 (JV 2020)* states that, “the joint force of 2020 will use superior information and knowledge to achieve decision superiority, to support advanced command and control capabilities, and to reach the full potential of dominant maneuver, full dimensional protection, and focused logistics. This set of objectives is referred to as full spectrum dominance.” Furthermore, it states that “Information superiority provides the joint force a competitive advantage only when it is effectively translated into superior knowledge and decisions. The joint force must be able to take advantage of superior

information converted to superior knowledge to achieve 'decision superiority'—better decisions arrived at and implemented faster than an opponent can react, or in a noncombat situation, at a tempo that allows the force to shape the situation or react to changes and accomplish its mission." See <http://www.defenselink.mil/pubs> for the *National Security Strategy (NSS)*, *Quadrennial Defense Review (QDR)*, *JV 2010*, etc. (IRMC Measuring Results of Organizational Performance Course).

If it's stupid but it works, it's not stupid. (J. Dunnigan, *How to Make War: A Comprehensive Guide to Modern Warfare*, 3rd ed., Quill, Morrow, NY, 1993.)

Knowledge Transfer—see Tacit Knowledge Transfer

You may be disappointed if you fail, but you are doomed if you don't try. (Beverly Sills, quoted by Noah ben Shea in *Great Jewish Quotes*, Ballantine, New York, 1993.)

Knowledge Tree—see Knowledge Map

A hierarchical classification scheme that allows workers to "drill-down" to the most specific knowledge concept related to a topic and/or issue. The "drill down" approach allows knowledge workers to see all the topics related to a stated issue or concept. An embedded knowledge tree allows "analysis and summaries to be constructed for use as source material by others in the organization" (Alfredo Babiera, "Knowledge Management and the EBRD: Designing a Knowledge Management Programme for the Office of the Chief Economist," *Aslib Proceedings*, Vol. 51, No. 7, July/August 1999 [USA]). A knowledge tree resembles a decision tree or fishbone diagram in which the trunk is at the highest level of abstraction (lowest level of detail) but branches off into lower and lower levels of abstraction. It can be used similarly to a work breakdown structure or outline or organizational wiring diagram to follow a path to the knowledge (in this case) being sought. At each branching a decision must be reached as to which fork to follow.

What a laugh, though. To think that one human being could ever really know another. You could get used to each other, get so habituated that you could speak their words right along with them, but you never knew why other people said what they said or did what they did, because they never even knew themselves. Nobody understands anybody. (Orson Scott Card, *Shadow of the Hegemon*, Tom Doherty Associates, New York, 2000, p. 58.)

Knowledge Worker

Someone who primarily focuses on the generation, processing, storage, and use of knowledge. In the evolving service economy in the United States, knowledge workers are becoming more prevalent over time. "White collar" workers are undergoing metamorphosis into knowledge workers as their data and information management activities are becoming more automated through institutionalization of IT. Advances in artificial intelligence may hasten this transition. Unlike data or information workers, knowledge workers create and utilize the meaning and context inherent in knowledge. As workers acclimate to a knowledge economy, the possibilities for knowledge "flow" expand so that the two meanings for flow can coalesce.

It takes about 20 years for the ordinary run of people to begin thinking the thoughts of the educated person of today. (C. G. Jung, *Psychology and Religion: West and East*, CW11, Pantheon Books, New York, 1958, pp. 333–334.)

L

Lagging Indicators—see Leading Indicators

Measures of performance that represent the ultimate, long-term effects of an organizational intervention (IRMC Measuring Results of Organizational Performance Course). The indicators lag behind (in time) the intervention. Thus, the value of the intervention can only be evaluated after the fact using lagging indicators.

How does a project get to be a year late? One day at a time. (Fred P. Brooks, *The Mythical Man-Month*, Addison-Wesley, Reading, MA, 1975, p. 153.)

Last Mile

The connection between the customer and the telephone, cable company, or Internet service provider. The last mile has traditionally used copper-based telephone wire or coaxial cable, but wireless technologies offer alternative options for increased bandwidth in some locations. The last mile provides less security when utilizing virtual private networks. Unless the sender and receiver encode the data or information, it is relatively unprotected over the last mile.

Life is a suicide mission. (Orson Scott Card, *Children of the Mind*, Tom Doherty Books, New York, 1996, pp. 128, 146.)

Leadership

One of the 10 federal CIO competencies, specified by the Federal CIO Council Executive Board, included in the IRMC's curriculum for the CIO certificate. Leadership is intimately tied to change. Charles Fishman, in *Change*, says "After 10 years on the job you don't have 10 years of experience—you've got 1 year of experience repeated 10 times." <http://www.fastcompany.com/online/08/change.html>.

See Sharon Caudles's *Reengineering for Results: Keys to Success from Government Experience* <http://www.c3i.osd.mil/bpr/bprcd/3002s1.htm> (IRMC New World of the CIO Course), Thomas Kuhn's *The Structure of Scientific Revolutions*, Peter Senge's *The Fifth Discipline*, and Price Pritchett's *High Velocity Culture Change*. Change is primarily a psychological process in today's organizations; for instance, KM is considered to be at least two-thirds people and at most one-third technology. Leadership is quite different from management. As Peter Drucker pointed out, there is a difference between "doing the right things and doing things right." Craig Hickman in *Mind of a Manager, Soul of a Leader* elaborates beautifully on the differences between the two approaches.

A Model of the Varied Factors Differentiating Management and Leadership

Leadership	Do the right things	Intuitive	Vision	Theory	Rational	Effectiveness	Outcomes	Non-linear
Management	Do things right	Sensate	Plan	Practice	Empirical	Efficiency	Outputs	Linear

In his many books (e.g., *Executive Leadership* and *Requisite Organization*), Elliott Jaques elucidates the time span or time horizon differences between leadership (higher level, longer term view) and management (lower level, shorter term view); see <http://www.dau.mil/pubs/arg/2000arg/pollock.pdf>. It is also interesting to contrast the approaches of warfare: attrition (von Clausewitz) and relational-maneuver (Sun Tzu) as well as the past driving the present (Freud) versus the future drawing the present (Jung). John Kotter asks, in *Leading Change*, (Harvard Business Review Press, 1996) "Why would an intelligent person rely too much on simple linear, analytical processes? Answer: Because he or she has been taught to manage, but not to lead." James O'Toole (in a book with the same name, *Leading Change*, Jossey-Bass, 1995), in describing the "Rushmoreans," stated that "Those who do not respect and trust their followers cannot lead them. Conversely, those who succeed at bringing about effective and moral change believe in and act on the inherent dignity of those they lead" (IRMC Leadership for the 21st Century Course). For a somewhat contrarian view, see "The Long View of Leadership" by Alexander Ross in *Canadian Business* (May 1992).

History shows that most men who become great leaders had been incompetent followers. (Lawrence J. Peter, *The Peter Prescription*, William Morrow & Co., New York, 1972, p. 106.)

I learned from history that a leader is a man who has the ability to make other people do what they don't want to do, and like it. (Harry S. Truman, *Year of Decisions*, Doubleday, 1955 quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall Inc., Englewood Cliffs, NJ, June 1961, p. 210.)

Leading Indicators—see Lagging Indicators

Measures of performance that tend to show up early after an organizational intervention is introduced or which have been shown to predict a longer-term effect (IRMC Measuring Results of Organizational Performance Course). We need to appropriately value new technologies and developments rather than overvalue present ones.

Hammer and Champy allude to the famous story in which IBM failed to buy Xerox when ADL [Arthur D. Little, Co.] costed carbon paper usage. They also mention: Inductive thinking (see of new technology for new uses), Say's Law (supply creates its own demand), and The Wayne Gretzky School of Technology ("Go where the puck is *going* to be, not where it is.") They state that "People do not know they want something until they see that they can have it; then they feel they can't live without it," recommend that you go outside your frame of reference [outside the dots], and that "Market research done for a product that does not yet exist is useless." (Michael Hammer and James Champy, *Reengineering the Corporation*, Harper Business, New York, 1993, pp. 85-100.)

Learning Organization (LO)—see Change Management and Organizational Learning

An organization committed to continuous learning, both for individuals (in their personal development) and for the organization as a whole. The DON Continuous Learning Guidance was issued on July 11, 2000, by a DON CIO memorandum (adapted from *Glossary of IM/IT & KM Terms*). "A place where people are continually discovering how they create their reality. And how they can change it ... an organization that is

continually expanding its capacity to create its future ... the process whereby management teams change their shared mental models of the company, their markets, and their competitors. For this reason, we think of planning as learning and corporate planning as institutional learning" (de Gues, "Planning as Learning" *Harvard Business Review*, 1988, vol. 66, No. 2).

Organizational learning occurs when people share ideas, reflect jointly on emerging patterns and insights, build common theory and plan together. The result of learning is consistent patterns of institutional action. Institutional action is the result of a coherent set of individual actions that are supported by a critical mass of opinion within the organization. It is difficult to maintain a learning organization because it takes much time and resources, implies that members don't know things, implies that past methods are no longer valid, means bending the rules and changing how people act and do business, and requires incentives and rewards to encourage risk-taking. Organizational learning involves surfacing, testing, and changing mental models, making tacit knowledge explicit, and developing a culture-language-conversation of learning that pervades an organization (IRMC Leadership for the 21st Century Course). This is not an entirely conscious process, but it requires considerable conscious commitment to succeed.

In accordance with the principles of change management, people's capacity or inclination to change varies throughout the organization and over time. Since the LO paradigm requires individuals to examine and challenge long-held belief systems, it is not easy to implement. The idea of an LO is of course conceptual, since organizations are mental constructs and have no inherent reality. Rather, it refers to a systems thinking approach to learning within an organization—addressing interpersonal interactions and learning and development. Its spread throughout an organization resembles that of genetic algorithms so that, if such behaviors as typify LO become socially acceptable (especially if they become socially desirable), they can pervade the organization as a naturally occurring phenomenon—virtually self-replicating. The key is to reach an acceptable critical mass for the process to become self-sustaining. Nevertheless, as American philosopher Eric Hoffer stated, "In times of change, learners inherit the earth" (IRMC Leadership for the 21st Century Course).

Learning is not merely the memorizing of isolated facts but rather a perennial search for values relevant to the learner's existence. (Longchenpa [Klong-chen rab-'byams-pa], *Kindly Bent to Ease Us, Part I: Mind from The Trilogy of Finding Comfort and Ease* [Ngal-gno skor-gsum], translated by Herbert V. Guenther, Dharma Publications, Emeryville, CA, 1975, p. 72.)

Learning Organizations Archive Innovation Associates: <http://world.std.com/~lo>.

Legacy System—see Business Process Reengineering

A system or application in which an organization has already invested considerable time and money. For instance, a legacy system could be a database management system (DBMS) running on a mainframe or on minicomputers. An important feature of new software products is their ability to effectively interoperate with or at least interface with existing legacy systems. Legacy systems may be candidates for phase-out, upgrade, or

replacement. The prevalence of large numbers of legacy systems with much functional overlap greatly increases software maintenance costs and reduces government efficiency. Cash-flow considerations, requirements differences (especially in trying to convert to joint or common systems), and continuing need for extant, large databases make conversion and upgrade difficult. However, new paradigms and overarching policy changes can force the issue. Thus, Task Force Web has been empowered to webify the Navy and the program executive officer for IT (PEO-IT) must manage applications for the Navy/Marine Corps Intranet. Such efforts necessitate a legacy systems audit to determine which must be retained, which may be eliminated, which might be modified or consolidated. Sometimes a legacy system may be virtually integrated into a resulting, larger system using special middleware products, tailoring, and new coding (cf. virtual integration). See Norman Schneidewind's "How to Evaluate Legacy System Maintenance" (*IEEE Software*, July/August, 1998). Legacy systems are often identified with "stovepipes" since the majority were created prior to present trends towards interoperability and open systems. Furthermore, organizational hierarchies and evaluation methodologies tended to enforce system independence.

We killed the Indians for being on our land before we got there. (*Maverick*, the movie.)

Level of Abstraction (LoA)—see Vision/Mental Models, Systems Thinking, and Activation Theory

The inverse to level of detail, LoA refers to the breadth of view versus the depth (level of detail or LoD). It is sometimes referred to the 50,000-foot level (with the lower levels of abstraction at lower elevations). A LoA is equivalent to a higher LoD. It has also been referred to as the "helicopter principle" since the LoA rises (and LoD decreases) as a helicopter rises into the sky. It is well depicted in the award-winning short movie "Powers of 10," which is shown in its own small theater in the National Air and Space Museum in Washington, DC. The camera initially shows a couple on a beach on Lake Michigan then rises at a steady rate of increasing abstraction (a power of 10 increase over time) into the far-flung universe. Then it returns back down but continues past the initial view and into the skin of a person, into the microscopic world and beyond. Elliott Jaques extends LoAs to work experiences, extrapolating that individuals have appropriate levels of work and that there are negative effects if they cannot work at the appropriate level. This argument (and its longitudinal supporting, empirical data) is supported by the many findings of activation or arousal theory of behavioral psychology (as described by Elizabeth Duffy and others).

There are different ways of knowing the world depending upon the level of abstraction of the particular person engaged in constructing his particular picture of reality. (Elliott Jaques, R. O. Gibson, and D. J. Isaac, *Levels of Abstraction in Logic and Human Action: A Theory of Discontinuity in the Mathematical Logic, Psychological Behaviour and Social Organization* Heinemann, London, 1978, p. 31.)

How any two people perceive the same problem or activity will be different according to the differences in their level of abstraction. (*Ibid.*, p. 278.)

Different pictures of the world, based on different levels of abstraction, lead to different accumulations of experience, of different patterning and ordering of detail, and different final outcomes. (*Ibid.*, p. 298.)

Forced under-employment through lack of availability of adequate levels of work in the bureaucratic sector of industrial societies has effects akin to imprisonment. (*Ibid.*, p. 300.)

Lightweight Directory Access Protocol (LDAP)

Widely used protocol for accessing and searching user information contained on disparate directories on a variety of incompatible systems (*Glossary of IM/IT & KM Terms*).

I don't know the key to success, but the key to failure is trying to please everybody. (Bill Cosby, quoted by Robert Byrne in *The 637 Best Things Anybody Ever Said*, Atheneum, NY, 1982, #322.)

Likert Scale—see Comparative and Ordinal Scales

A scale used in questionnaires in which respondents indicate the extent of their agreement or disagreement with statements of moderate attitudinal intensity (see table below) (IRMC Measuring Results of Organizational Performance Course).

Some Likert Scales		
	Scale Type	
Value	Satisfaction	Agree/Disagree
5	Very satisfied	Strongly agree
4	Satisfied	Agree
3	Neutral	Neutral
2	Dissatisfied	Disagree
1	Very dissatisfied	Strongly disagree
0		Don't know / not applicable

Measurement is the process of ordering the psychological experience of magnitude to an external and readily observable scale. It is a relationship between inner sensations that are not directly shareable and an outer yardstick which we can all observe in common. (Elliott Jaques, *Creativity and Work*, International Universities Press, Inc., Madison, CT, 1990, p. 248.)

Local Area Network (LAN)

A server or set of servers, the group of computers and associated devices that they service, and the connectivity (common communications line) amongst them. A LAN typically resides within a small geographic area (e.g., an office building). Usually, the server has applications and data storage that are shared in common by multiple computer users, as few as two or three users (for example, in a home network) or as many as thousands of users. LANs are cost efficient because they share resources (such as printers) and enable collaboration (shared files on the server can be accessed, read, modified by multiple users on the LAN). They also provide better response and transmission times than dial-up modems and provide increased security, since LANs usually include firewalls and intrusion devices.

A poet's hope: to be
Like some valley cheese,
Local, but prized everywhere.
(W. H. Auden, 1907-1973, *Collected Poems*, XII 1958-1971, "Shorts II," from *The Oxford Dictionary of Quotations*, Oxford University Press, New York, 1980, p. 20, No. 14.)

Local Multipoint Distribution Service (LMDS)

A wireless protocol originally designed for wireless cable TV. It is limited to line of sight (LOS) transmission; has a 9-mile range; operates at 28-31 GHz; and has a 875 Mbps data rate. While LMDS has a huge data rate, it is very limited due to its LOS restriction—any obstruction between the antennas will obstruct the service. See multipoint multichannel distribution service (IRMC Managing Networked Security in a Networked Environment Course).

Television: a medium. So called because it is neither rare nor well done. (Ernie Kovacs. *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 480.)

Local Registration Authority (LRA)—cf. Certification Authority and Registration Authority

Widespread enterprises utilizing public key infrastructure create or contract for a registration authority. The RA can delegate authority for local operations and functions to a local RA. RAs create digital certificates.

In work, the essence of the activity is the exercise of discretion. Indeed, as I have had the opportunity to learn in connection with work measurement, the psychological experience of effort in work lies solely in the exercise of discretion. This feature is the same whatever the type of work at issue; that is to say, whether we deal with so-called creative work, or research work, or administrative work, or manual work, or the work of teaching, the crucial factor has to do with the exercise of discretion. (Elliott Jaques, *Creativity and Work*, International Universities Press, Inc., Madison, CT, 1990, p. 155.)

Log Files

Web servers record log files that identify the name and Internet protocol address of computer, time of request, uniform resource locator (URL) requested, file download times, user name, errors occurring, refer link (previous Web page), and kind of browser used. The local area network administrator generally controls the Web server and, thus, the log files. Log files can be used against you in a court of law! Audit log should be protected, retained, and intrusion detected. These files should be recorded on a write once CD (CD-R), because neither a hacker nor the agency can erase them (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

Once a word has been allowed to escape, it cannot be recalled. (Horace, xviii, 71, from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 123.)

Logical Data Model

A model of data that represents the inherent structure of that data and is independent of individual applications of the data and also of the software or hardware mechanisms

that are employed in representing and using the data (DoD 8320.1-M, *Data Administration Procedures*) (IRMC Data Management Strategies and Technologies Course).

After months of negotiation with the authorities, a Talmudist from Odessa was granted permission to visit Moscow. He boarded the train and found an empty seat. At the next stop a young man got on and sat next to him. The scholar looked at the young man and thought: This fellow doesn't look like a peasant, and if he isn't a peasant he probably comes from this district. If he comes from this district, then he must be Jewish because this is, after all, a Jewish district. On the other hand, if he is a Jew, where could he be going? I'm the only Jew in our district who has permission to travel to Moscow. Ahh? But just outside Moscow there is a little village called Samvet, and Jews don't need special permission to go there. But why would he be going to Samvet? He's probably going to visit one of the Jewish families there, but how many Jewish families are there in Samvet? Only two: the Bernsteins and the Steinbergs. The Bernsteins are a terrible family, and a nice looking fellow like him must be visiting the Steinbergs. But why is he going? The Steinbergs have only daughters, so maybe he's their son-in-law. But if he is, then which daughter did he marry? They say that Sarah married a nice lawyer from Budapest, and Esther married a businessman from Zhitomer, so it must be Sarah's husband. Which means that his name is Alexander Cohen, if I'm not mistaken. But if he comes from Budapest, with all the anti-Semitism they have there, he must have changed his name. What's the Hungarian equivalent of Cohen? Kovacs. But if they allowed him to change his name, he must have some special status. What could it be? A doctorate from the University. At this point the scholar turns to the young man and says, "How do you do, Dr. Kovacs?" "Very well, thank you, sir" answered the startled passenger. "But how is it that you know my name?" "Oh," replied the Talmudist, "it was obvious." (Received as Internet e-mail—an illustrative story.)

Logic Bombs

Programs added to existing applications that execute under prespecified conditions (usually a date) to trigger execution of a destructive payload. They are not self-replicating. Sometimes they can be activated through sharing infected software. Configuration control mechanisms and peer reviews of newly delivered code lower the risk of logic bombs.

You are a barnacle on the ship of progress. (Robertson Davies, "The Ugly Spectre of Sexism," *High Spirits*, Viking Press, New York, 1982, p. 106.)

Logon

The process of establishing authentication and identification between a user and an automated system (computer, Web site, local area network). Various means (with varying strengths) are used to do so. These range from the weakest (no identification) through personal identification numbers, passwords or secret phrases, smart cards, to biometrics. According to William Murray (from Charles Breed, *PKI: The Myth, the Magic and the Reality*, http://networking.earthweb.com/netsecur/article/0,,12084_615851,00.html (see part 4) used in IRMC Managing Networked Security in a Networked Environment Course), "millions of computer users are spending tens-of-minutes per day logging on and logging off [so that] even small improvements in the efficiency of logon are valuable. In a world in which the biggest single chore of administrators is remedying lost and forgotten passwords, these [PKI] advantages are significant."

It is useful to place an account history banner on the screen during logon (this puts the last time a user logged on onto the screen so that the user can check to see if there is an

anomaly) (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

One machine can do the work of fifty ordinary men. No machine can do the work of one extraordinary man. (Elbert Hubbard, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 212.)

M

Mail Bombs—see Denial of Service

Mail bombs are attacks intended to disrupt or deny service by an information system (usually through the Web). They are sent via e-mail. For instance, the attacker could use a mail bomb which floods the server, 35 Mb attachments to e-mails to crash the server, attach nested attachments to e-mail messages to crash the server (IRMC Managing Networked Security in a Networked Environment Course).

People are unaware of many of the basic reasons why they behave in the way they do, and to discover these reasons is difficult and time-consuming, and calls for special procedures. (Elliott Jaques, *The Changing Culture of a Factory*, Dryden Press, New York, 1952, p. 251.)

Mainframe Computer

Computers were originally large devices employing vacuum tube technology and relays for memory. RADM Grace Hopper, USN, one of the people who worked on ENIAC, the first government computer, gave lectures on what it was like working on it. She explained that the first computer bug was an actual insect that fouled up the computer by entering into its innards. The operators taped it into their logbook. RADM Hopper also handed out “nanoseconds,” lengths of wire about a foot long or so—the distance light travels in one nanosecond (1 billionth of a second).

In the 1970s mainframe computers were large and expensive, owned by large enterprises. They were used in a batch mode rather than interactively. Users submitted their programs (usually in boxes of punched cards) to the computer department that ran the jobs consecutively. Such jobs could be in computer assembly language (not far removed from octal equivalents of computer language or binary), emerging high-level languages (HLLs), or high-order languages (HOLs) such as FORTRAN or ALGOL. Programs were assembled (by an assembler program if written in assembly code) or compiled (by a compiler program if written in a high-level language). Initially, compilers needed two passes; first converting the HLL into assembly language and then into computer language. Later compilers compiled directly into binary. Improvements in technology and software resulted in the advent of minicomputers that were far more affordable and could be decentralized (not all located in a central computer department). BASIC was developed as an intermediate HOL, easier to learn and use, but not as powerful. Computers were adapted to perform multiprocessing such that several programs could execute at the same time.

Microcomputers further shrank the size and cost of computers. Initially, they were dedicated to word processing functions (a program management office might have had a single word processor for the office). Continued improvements in technology and software resulted in the personal computer and permitted them to be distributed throughout the enterprise. Initially, they used the disk operating system. However, many users utilized dumb terminals (now called thin clients) that had little innate computing

power. Their computing power and main memory resided in a mainframe computer to which the terminals were attached.

As these terminals evolved into PCs with great computing power and large memories, Microsoft Windows introduced multiprocessing and display to individual users. Servers, specialized computing devices, were linked up with user computers, printers, graphics terminals, et al., to create local area networks (LANs). This arrangement can be analogous to the prior mainframe or dumb terminal architecture, if the PCs are all attached to the server. Ethernet and other developments resulted in more of a circular arrangement of units in the LAN so that individual units can be modularly attached and unattached to the LAN at will.

However, during the age of the incredible shrinking computer, mainframes did not disappear. Rather, they also improved dramatically resulting in the supercomputer (e.g., Cray). But PCs have now been ganged to virtually create supercomputers via their increased system computing power. On the other hand, the National Science Foundation responded by ganging together a large number of supercomputers forming a virtual superdupercomputer over the Web. Thus, the mainframe computer has also evolved during the computer or information age.

Worthless. (Sir George Bidell Airy, K.C.B., M.A., LL.D., D.C.L., F.R.S., F.R.A.S., Astronomer Royal of Great Britain, estimating for the Chancellor of the Exchequer the potential value of the "analytical engine" invented by Charles Babbage, September 15, 1842. This resulted in the British government discontinuing its funding for Babbage. Today, however, Babbage is hailed as the inventor of the computer. (Christopher Cerf and Victor Navasky in *The Experts Speak*, Villard, NY, 1984, p. 230.)

Malware

Malware is malicious code. It can take the form of Trojan horses, time bombs, viruses, and worms. Certain techniques (such as tunneling and P2P) risk contamination by malware. Anti-virus programs only catch known viruses. They are no protection against other types of malware. VPNs and encryption schemas protect against the introduction of malware during transmission, but may increase vulnerability if not used properly, by lulling users into complacency. For instance, a firewall may be rendered useless if using a VPN. The recipient relies instead upon the trust relationship with the sender. Malware is not the only threat to software intensive systems, however, as the table below shows (IRMC Advanced Software Acquisition Management Course).

Specific Threats to Software-Intensive Systems^a

Source	Embedded	Standalone	Networked
Malicious software	Low	High	High
Hackers (intrusion)	Low	Medium	Medium
Reverse engineering	Low	Low	Medium
Software errors	High	High	High

a. John Egan, "IS Threats to Software-Intensive Systems," 1997 Software Technology Conference, April 27 to May 2, 1997.

Only those live who do good. (Count Leo Tolstoy, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 216.)

Man-in-the-Middle Attacks—see Digital Certificate, Knowledge Management Infrastructure, and Public Key Infrastructure (PKI)

These are threats to PKI in which the attacker spoofs a target's digital certificate (public key). Messages sent via this bogus public key (intended for the target recipient) can only be decrypted by the attacker.

People are remarkably resourceful in finding new ways to drop the ball. (Michael Hammer and James Champy, *Reengineering the Corporation*, Harper Business, New York, 1993, p. 213.)

Maturation

A threat to acceptance of evaluation results which states that the performance would have improved—even if they didn't experience the intervention—just because of the additional experience they would have gained with the passage of time (IRMC Measuring Results of Organizational Performance Course).

There are people who, psychologically, might be living in the year 5000 B.C., i.e., who can still successfully solve their conflicts as people did 7,000 years ago. There are countless troglodytes and barbarians living in Europe and in all civilized countries, as well as a large number of medieval Christians. On the other hand, there are relatively few who have reached the level of consciousness which is possible in our time. We must also reckon with the fact that a few of our generation belong to the third or fourth millennium A.D. and are consequently anachronistic. (C. G. Jung, *Psychology and Religion: West and East*, CW11, Pantheon Books, New York, 1958, p. 308.)

Mavens

Mavens, according to Malcolm Gladwell, are individuals within a social network who possess detailed knowledge in a particular domain so that they can influence other people. In classical management, they would be said to possess expertise power. Authority is a formal right to exercise power (as shown, for instance, in an organizational chart or "wiring diagram"), but power is the actual ability to accomplish something. The two do not necessarily correlate well; though classical management says that they should. Mavens are extraordinarily valuable in knowledge networks, communities of practice, and information networks. IT mavens are frequently consulted, for instance, by co-workers with questions on computers, software applications, and related matters. Such people tend to have considerable informal prestige. Personnel specialists refer to mavens as subject matter experts (SMEs), but mavens tend to be at the high end of the SME distribution; the best SMEs would be the mavens (cf. connectors and salesmen). Of course, mavens exist outside of work organizations also. If you have a question in a certain area of knowledge, and you know just who to ask about it to get a direct answer (what computer to buy, where to find a particular item, etc.), that person is probably a maven. If, however, the person you ask primarily serves to refer you to someone else (but knows who to ask or seek), the person is probably a connector.

We might define education as the process of gradually changing the emphasis of the underlying instincts from the egocentric to the altruistic. (Stewart Edward White, *With Folded Wings*, E. P. Dutton, New York, 1947, p. 5, p. 11.)

Meme

The smallest form of learning instructional information. It could be a tip, a one-phrase insight, or a paragraph containing the unique perspective that gives the learner an 'ahaaa' feeling of illumination on a life experience ("The Human Capital Reserve Board: A Parable" by Thomas P. Hill, in *Leader Learning*, Fall 2001, <http://www.linezine.com/6.2/articles/thhcrbap.htm>).

Brevity is the soul of wit. (Shakespeare, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 273.)

Mentoring

The process whereby a person (often in the generative stage of life) assists a less experienced person to learn and develop competence and capability within a domain. Generally, the mentor is two levels above the mentee's organizational grade or level. Success depends as much upon personal rapport as upon technical or functional experience—mentees and mentors must be self-selected. This process differs significantly from on-the-job training programs or apprenticeship relationships, where new recruits are assigned a more experienced employee to help the recruit adapt to the new business environment. Mentoring and coaching relationships can help to maintain the balance of knowledge transfer modes within an organization, such that learning is not solely expected to happen through explicit training courses, manuals, etc. Mentoring is a primary means for tacit knowledge transfer. Communities are fertile fields for such relationships.

The silence of a wise man is more wrong to mankind than the slanderer's speech. (William Wycherley, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall Inc., Englewood Cliffs, NJ, June 1961, p. 363.)

You learn by association, without knowing what you are looking at.¹⁴ In such an apprenticeship, much explicit knowledge is conveyed from expert to novice, but tacit knowledge grows through shared observation and from mimicking behavior, even without knowing why. The newer such technologies are to the world, the more important apprentices are to the innovation process. The faster the innovation cycle, the less likely that knowledge will be captured explicitly. (Dorothy Leonard and Sylvia Sensiper, "The Role of Tacit Knowledge in Group Innovation," *California Management Review*, Berkeley, CA, Spring 1998, Vol. 40, Issue 3, pp. 112-132.)

Metadata—cf. Data Repository and Metadata Repository

Data (or information) about data. Metadata is an overarching term including several variants:

- 1) Types of data. In a data repository, for instance, the names, designators, or categories of data (e.g., headers in a relational database) are metadata.
- 2) Characteristics of data. The specific nature of the entries in the database is part of the metadata. For example, whether temperature is provided as Fahrenheit, centigrade, or

Kelvin in the database or repository. Data accuracy is also part of the metadata—is the measure an integer? If not, how many decimal places are included?

3) Location of data. Descriptive information about an organization's data holders and cognizant personnel are also considered to be metadata. (CIO Council Interoperability Committee, "What Every CIO Needs to Know About Metadata," February 25, 1999) (IRMC Data Management Strategies and Technologies Course).

I never metadata I didn't like. (Neal Pollock, April 12, 2000, at a DMI IPT meeting.)

Metadata Repository—cf. Data Repository

A specialized database that stores metadata and makes it available for systems developers and end-users across an enterprise. A metadata repository provides visibility into the data assets of the organization to promote reuse, integration, and a shared baseline. The Navy's new Data Management and Interoperability Repository (DMIR) is actually a metadata repository. A metadata repository is a powerful tool to enable data management. A metadata repository can assist a government agency not only in managing its data and metadata, but also in achieving and confirming its compliance with the Clinger-Cohen Act and, thus, issuing 8121 (2000) or 8102 (2001) certifications.

It is what we think we know already that often prevents us from learning. (Claude Bernard, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 264.)

Metaknowledge

A concept (though not the terminology) used in one of the cells of the Johari Window that depicts what you know that you know. The other three cells or panes are: what you know that you don't know, what you don't know that you know, and what you don't know that you don't know.

Meta-knowledge is "knowing what you know"—the "knower knowing the knower." Self-knowledge is at the heart of culturing that level of intimate awareness with processes ("the way I do things around here") that underlies self-referential functioning. There is accumulating evidence that meta-knowledge is at the core of "learning" and that it is ultimately responsible for the level of meaning that an individual knower ascribes to a particular object of knowledge. The inability to "know what it knows" is a characteristic of an information-processing structure (whether a human individual, organization, or machine computer) that is sequential in nature and based on localized, separated memory stores. Thus, when confronted with an item of information, the traditional computer has no conceptual way of determining whether the information is known (i.e., already stored in memory) or unknown (i.e., not stored in memory), in which case it must be learned. For example, if presented with two customer transaction records—one of which is already in a database, the other which is not—the traditional computer architecture will perform the same exhaustive search in both instances before making either a positive or negative identification. Similarly, one of the most prevalent problems faced by the typical large organization when confronted with changing environmental parameters is deciding whether or not the incoming information represents something genuinely new that calls for a strategic redirection. Sometimes, the appropriate identification is not made until it is too late to act. Meta-knowledge involves the ability to appreciate the degree to which the meaning of information is context-dependent and requires reasoning by analogy (i.e., pattern recognition). This ability is how a knower adapts and responds; it is the essence of

learning. (Rashi Glazer, "Measuring the Knower: Towards a Theory of Knowledge Equity," *California Management Review*, Berkeley, CA, Spring 1998, Vol. 40, Issue 3, pp. 175–194.)

Metrics—cf. Information

Metrics are measurements generally used as measures of success of a project or operation. There are three major types of metrics used in IT: system, output, and outcome. System metrics measure how well the IT support system is functioning but not the application or content being processed. Output metrics measure the internal (closed system) performance of the system being measured—including processes and use of content (inputs). They may be of interest in optimizing the efficiencies of the system. They are of more interest to design engineers versus systems engineers. They often measure the performance of subsystems and components of systems. Outcome metrics measure the system as a whole (open systems view) within an external environment. Thus, they are of interest to systems engineers evaluating the effectiveness of the system as a whole and especially to users of the system and other external stakeholders. The Information Resources Management College (IRMC) requires students in its Chief Information Officer certificate program to successfully complete its course entitled (Measuring Results of Organizational Performance Course). This course extensively explores IT metrics. Management of any enterprise or project requires appropriate and adequate feedback so that decisions and adjustments can be made. While anecdotal data and stories can be quite helpful in qualitatively evaluating and expressing the status of a project, they are not an adequate replacement for good metrics.

Metrics generally are numerical and statistical and must be valid (not just reliable). In addition, decision makers must have some way to translate the metrics into meaningful form. In other words, metrics are data evolved into information. Means must be preestablished to understand the metric information—to translate it into knowledge. There are several approaches to this. Most of them are relativistic in nature—comparing the measured results against some preselected standard. For instance, an industry standard (benchmark) can be selected for comparison. Alternately, when modifying an existing process, the initial process is measured with the metric to establish a baseline. After the new or modified process is established, it is measured with the same metric (under the same or reasonably similar circumstances) for comparison against the baseline. This way progress can be charted over time. There are also absolute methods such as thresholds, which are useful when there is a strong reason to achieve a specific, measurable goal.

Metrics are necessary because: "If you cannot measure it, you cannot control it. And, if you cannot control it, you cannot manage it." If you cannot demonstrate that you are meeting customer (stakeholder) expectations, you will not be able to make a case for resources." Robert S. Kaplan and David P. Norton's "Balanced Scorecard" (*The Balanced Scorecard: Translating Strategy into Action*, Harvard Business School Press, Boston, 1996) is a relatively new approach to metrics that includes the application of an organization's vision and strategy in the customer, financial, internal business process, and learning and growth arenas (IRMC New World of the CIO Course). The term "metrics" is often used interchangeably with "measurement" but is sometimes used to mean a composite of two or more independent measures, typically in the form of a ratio or index number (A.

Laurent, "Extreme Measures: Agencies are Struggling to Avoid Dysfunctional Measurement as They Try to Prove Programs are Achieving Real-World Results," *Government Executive*, 1999, February, pp. 45-48, <http://www.govexec.com/gpp/0299mr.htm> (IRMC Measuring Results of Organizational Performance Course). "What gets measured gets done." Criteria for measurement: accurate (valid, reliable), relevant (important, credible), and practical (economic, timely, simple, tamper proof). Objective measures (e.g., cost-benefit analyses, baseline studies) are used when standards are available; subjective measures (e.g., surveys, case studies, interviews) are used when process is not well understood. Hierarchy of measures should be linked to mission and outcomes; should be a vital few, linked to responsibilities, and balance multiple perspectives; should be used to make decisions and create processes (IRMC Advanced Software Acquisition Management Course).

From Gary Hacker's *HR Metrics News* consolidated from Issues 1-5 (OPM):

The Dark Side of Metrics by Gerry Crispin <http://www.staffing.org/views/points/feb01.html> 3/02. "It was many years ago while participating on process improvement task force that I first observed the dark side of metrics."

Let the Number Help You: Meaningful Metrics for Today by Kevin Wheeler: <http://www.gresources.com/columns/letthenumbershelpyou.htm> 4/02. "Recruiters, like so many others on the support side of business, generally don't have good statistics about what they do, nor do they have a plan to communicate to management just what they have contributed. It doesn't have to be that way."

Training Measurement 2002 Conference: (Presented by IQPC) <http://www.iqpc.com/cgi-bin/templates/101499331528707885742100002/genevent.html?event=2301&topic=> 3/02, 4/02 (May 15-16, 2002; Chicago, IL; \$1599). "Hear case studies and crucial industry information from leading organizations who are improving their training effectiveness with performance measurement tools, such as training scorecard."

HR666: HR Metrics Live Cases: <http://www.ilr.cornell.edu/cahrs/EPArchives.htm> 5/02 (Fall Semester 2002, Cornell University, Ithaca, NY). "Now is the time to consider participating as a live case study site for student teams in Professor Boudreau's HR Metrics' class during the Fall 2002 semester. Live cases offer ILR students a tremendous learning opportunity, and frequently pay significant dividends for participating organizations like yours. They are a unique way for you to gain valuable visibility with our students, and to contribute significantly to the learning process."

Reality neither consists of theories nor follows them. (C. G. Jung, *Psychological Types*, CW6, Princeton University Press, Princeton, NJ, 1971, p. 493.)

All good depends on the right measure. (C. G. Jung, *Letters*, Vol. 1, Bollingen Series 95, 1906-1950, Gerhard Adler and Aniela Jaffe, Eds., Princeton University Press, Princeton, NJ, 1953, p. 506.)

Metropolitan Area Network (MAN)

A system of links or a ring that interconnects a relatively high concentration of local area networks together within a small regional area. The demarcation points for the MAN are the service delivery nodes at the campus, base, post, or station router or switch and the hub, router, and switch of the wide area network (WAN) (*Glossary of IM/IT & KM Terms*).

No duty an Executive had to perform was so trying as to put the right man in the right place. (Thomas Jefferson, 1743-1826, J. B. McMaster's *History of the People of the United States*, Vol. ii, ch. 13, p. 586, from *The Oxford Dictionary of Quotations*, Oxford University Press, New York, 1980, p. 272, No. 18.)

Micro Purchases

Government purchases for less than \$2,500. The preferred method of purchase is by government purchase (credit) card (GPC). The purchases are not competitive, but are amenable to electronic commerce.

I prefer a small success to a larger failure. (LCDR Don Avery, PMW143, SPAWARSYSCOM, February 3, 1988.)

Middleware—see Common Object Request Broker Architecture, Glueware, and PKEnable

Software programs that enable two or more other software programs or systems to communicate with each other. Middleware is usually constructed or tailored to connect preexisting programs together. Often these legacy systems were not originally designed to pass information between them. Middleware is essential in virtual integration. It is particularly valuable in adding, connecting, and interfacing contractor off-the-shelf software packages (applications). An extensive set of legacy systems, for instance, lacking any standard data or interfaces, can each have a piece of middleware designed to interface with the particular application and with a central or standard database or application. This precludes creating a huge number of cross interfaces between each pair of applications in the entire set, while creating a system wherein each member application can communicate with each other member.

The rule of the majority has a narrow application, i.e., one should yield to the majority in the matter of detail. But it is slavery to be amenable to the majority no matter what its decisions are. Democracy is not a state in which people act like sheep. Under democracy, individual liberty of opinion and action is jealously guarded. I therefore believe that the minority has a perfect right to act differently from the majority. (Mohandas K. Gandhi, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 98.)

MIME, S/MIME (Multipurpose Internet Mail Extension, Secure/MIME)

A common method for transmitting nontext files via Internet e-mail. MIME encodes the files using one of two encoding methods and decodes it back to its original format at the receiving end. A MIME header is added to the file, which includes the type of data contained and the encoding method used. S/MIME is a version of MIME that includes the sender's digital credentials for secure transmission (*Glossary of IM/IT & KM Terms*).

Those who are absent, by its means become present; it is the consolation of life.
(Voltaire, "Post," *Philosophical Dictionary*, 1764, from *The International Thesaurus of Quotations*, Rhoda Thomas Tripp, Harper & Row, New York, 1970, p. 349, entry 532, No. 4.)

Mirroring

A data backup technique in which two disks are used vice one. Information on one disk is duplicated onto the other disk (automatically). This can cause a slight loss in writing performance. Disk duplexing is a variation in which each disk has its own controller, helping to increase write operations and provide redundancy in case a controller fails. Mirroring retains fast read operations; has rapid failure recovery; and the system and boot partitions can be mirrored. However, write operations are somewhat slowed; it requires twice the storage capacity; a fault-tolerant boot disk must be created from <http://support.microsoft.com/default.aspx?scid=KB;EN-US;Q114779&> (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

Memory does not mirror the past; memory re-creates the past. (J. W. Ehrlich, *The Lost Art of Cross-Examination*, G. P. Putnam, New York, 1970, p. 43.)

Mobile Code

Executable software that is transferred between parties (usually over the Internet and between suppliers and customers or between clients and servers). Java and ActiveX are the primary types (IRMC Data Management Strategies and Technologies Course).

Comparison of Characteristics of Mobile Codes

Criteria	Java	ActiveX
Language	Dependent	Independent
Platform	Independent	Dependent
Security	Secure	Insecure
Openness	Open (ISO)	Proprietary
Speed	Slower (interpreted)	Faster (com.)
Size	Smaller	Larger

I don't write these stories, they write me. (Ray Bradbury, *Quicker than the Eye*, Avon Books, New York, 1996, p. 258.)

Model

A representation of a system, conceptual or pictorial. A model is not identical to the system, but is an analogy for that system, and as with all analogies, is not perfect or complete. Models provide frameworks (frames) of understanding and provide bases for

human communications. Modeling has long been identified with simulations, which are dynamic process models, whereas models, per se, are usually viewed as being static. Thus, systems engineering could be viewed as incorporating a subdomain entitled "modeling and simulation" (M&S). Someone defined "unreality" to be when someone observes something, interprets the observation, remembers the interpretation (but not its cause or frame), forgets that it is only an interpretation, and acts as if the interpretation were the reality. In essence there is a risk that people immersed in a model can forget that it is only a model and not reality. We may state, for instance, that we are an "ESTJ." (Extroverted Sensing/Sensate Thinking Judging). In truth, there really is no such thing because the Myers-Briggs Type Indicator is only a model of individual preferences. It is not reality. There is no set of stone tablets identifying each person's personality type. A model is a useful tool as long as we remember that it's only a tool and has its limitations. Models are artificial human constructs and, as such, are imperfect and incomplete.

Defense Modeling and Simulation Office: <http://www.dmsomil.com>.

A scientific theory is just a mathematical model we make to describe our observations: It exists only in our minds. (Stephen Hawking, *The Illustrated A Brief History of Time*, Bantam Books, New York, 1996, p. 179.)

Modem

A device that implements modulation/demodulation. In order to send a signal over a wire (whether copper or fiberoptic), the signal is modulated by the sender, sent to the recipient, and demodulated by the receiver. The bandwidth (capacity) depends upon the modulator, nature of the cable and any intervening devices, and the demodulator. It is a chain, so that the weakest link determines the actual capacity of the chain of communications. Presently, computers have built-in modems with 56 kbs (kilobits per second) capacity or data rate. Thus, their maximum capacity in one second is 1,000 bits. Since there are 8 bits per byte (ANSI character), this equals $1,000 \div 8 = 125$ bytes/second or 7,500 characters/minute. (approximately 1,000 words/minute). While faster than a typist, it is rather slow by computer standards. Special lines (ISDN/DSL) provide increased capacity (e.g., 128 kbs) usually 2–4 times as large as the telephone modems. Cables have a capacity of approximately 1(5 Mbps one and a half million bps)—about 27 times as fast as the 56 kbs modems.

The time we waste in yawning never can be regained. (Stendhal, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 282.)

MP3 (MPEG-1 (Motion Picture Expert Group) Audio Layer-3)

A standard technology and format for compressing a sound sequence into a very small file (about 1/12 the size of the original file) while preserving the original level of sound quality when it is played. MP3 files (identified with the file name suffix of ".mp3") are available for downloading from a number of Web sites (Glossary of IM/IT & KM Terms).

Changing the world is good for those who want their names in books. But being happy, that is for those who write their names in the lives of others, and hold the hearts of others as the treasure most dear. (Orson Scott Card, *Children of the Mind*, Tom Doherty Books, New York, 1996, p. 354.)

Muds, Moos (Multi-User Dungeon, Multi-User Dimension, Multi-User Dialogue)

Interactive games played by several people on the Internet. Originally "Dungeons and Dragon"-type games with demons, elves, and magicians, MUDS have been created for science fiction themes, cartoon characters, and other types of games. MUDS have also evolved into 3-D virtual reality sites. There are many variations and permutations of MUDS. Knowledge-based environments are object-oriented MUDS, and MUSES (multi-user shared environments) are generally designed for elementary and secondary students. A mush (multi-user shared hallucination) allows new rooms and situations to be created (*Glossary of IM/IT & KM Terms*).

Every now and then go away, have a little relaxation, for when you come back to your work judgment will be surer, since to remain constantly at work will cause you to lose your power of judgment. Go some distance away, because then the work appears smaller and more of it can be taken in at a glance, and a lack of harmony or proportion is more readily seen. (Leonardo da Vinci (1452-1519), quoted by Len McGrath of PMS 415-31, October 1985.)

MultiLevel Security (MLS)

Methods used to enable the use of differing levels of security (i.e., classified information) on the same computer or equipment at the same time by different persons under varying circumstances. NSA has a Multilevel Information System Security Initiative (MISSI) that has produced the Secure Network Server (SNS) Mail Guard (SMG) that allows transfer of e-mail between networks of disparate security levels. See John Mochulski's "Connecting Classified Environments to the Internet," (*Crosstalk*, 1997, Vol. 10, No. 5, May, pp. 9-13 (IRMC Advanced Software Acquisition Management Course).

Men occasionally stumble over the truth, but most of them pick themselves up and hurry off as if nothing had happened. (Winston Churchill, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 486.)

Multiplexing

Sending multiple signals or streams of information on a carrier at the same time in the form of a single, complex signal and then recovering the separate signals at the receiving end. Analog signals are commonly multiplexed using frequency-division multiplexing (FDM), in which the carrier bandwidth is divided into subchannels of different frequency widths, each carrying a signal at the same time in parallel. Digital signals are commonly multiplexed using time-division multiplexing (TDM), in which the multiple signals are carried over the same channel in alternating time slots. In some optical fiber networks, multiple signals are carried together as separate wavelengths of light in a multiplexed signal using dense wavelength division multiplexing (WDM) (*Glossary of IM/IT & KM Terms*).

The right use of knowledge is fulfillment. (Ursula K. LeGuin, *Four Ways to Forgiveness*, Harper Prism, New York, 1995, p. 117.)

Multipoint Multichannel Distribution Service (MMDS)

MMDS is a wireless protocol originally used for wireless cable TV. It is not limited to line of sight (LOS); has a range of 36 miles; operates at 2.5/2/7 GHz; has a 50 Mbps data rate; is used to connect buildings over some distance, avoiding the LOS issues of local multipoint distribution service (IRMC Managing Networked Security in a Networked Environment Course).

The scientific theory I like best is that the rings of Saturn are composed entirely of lost airline baggage. (Mark Russell, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 439.)

N

Napster

An organization and its software application that allow users to share music over the Internet without purchasing their own copies. After downloading Napster, a user can access music recorded in MP3 format by: typing in the name of an artist or song, receiving a list of what songs are available, and downloading the music from another user's hard drive. The Napster directory lists what music is available, which depends on which Napster participants are presently on line and what music resides on their computers at the time. Napster uses peer-to-peer (P2P) methods, so that participants can access each other's computers. There are considerable security risks and copyright concerns with P2P. Napster lost a court case when it was sued for breach of copyright (cf. peer-to-peer).

It's easier to ask forgiveness than it is to get permission. (RADM Grace Hopper, USN, presentation at the Naval Sea Systems Command, Washington, DC, 1987.)

National Information Infrastructure (NII)—see Defense Information Infrastructure (DII) and National Infrastructure

Extension of the DII concept to the entire nation.

Kenneth Alford "DoD Software and the NII," *Crosstalk*, Vol. 7, No. 7, 7/94 pp. 12-4 (IRMC Assuring the Information Infrastructure Course).

The National Defense Authorization Act for Fiscal Year 1997 (September 23, 1996, P. L. 104-201, Subtitle F, § 1061, Policy on Protection of NII Against Strategic Attack) directs the President to report on this to Congress including: emergency needs, NII functions during an emergency, responsibilities of federal departments and agencies relating to attacks, technology and funding shortfalls, and legal and regulatory considerations. Its Section 1062, IS Security Program (ISSP), directs the Secretary of Defense to allocate given percentages of DII funding (Fiscal Year 1999, 2.5 percent; Fiscal Year 2000, 3.0 percent; Fiscal Year 2001, 3.5 percent; Fiscal Year 2002, 4.0 percent) to the ISSP in addition to National Security Agency and Defense Advanced Research Project Agency funds (IRMC Assuring the Information Infrastructure Course).

<http://www.nist.gov/hearings/1999/hr2086.htm>

<http://www.nist.gov/hearings/1999/kinftech.htm>

<http://www.atp.nist.gov/atp/97wp-lt.htm>

<http://physics.nist.gov/TechAct/Div840/ecsed.html>

<http://www.law.suffolk.edu/arodau/articles/arch.htm>

http://www.law.suffolk.edu/academic/hightech/ht_brochure.html

<http://www.law.suffolk.edu/academic/hightech/students/maieraccess.html>

While formal definitions of "information" and "knowledge" remain messy, many observers make the distinction that information is data that has been given structure and knowledge is information that has been given meaning. (Rashi Glazer, "Measuring the Knower: Towards a Theory of Knowledge Equity," *California Management Review*, Berkeley, CA, Spring 1998, Vol. 40, Issue 3, pp. 175-194.)

National Information Infrastructure Protection Act (NIIPA) of 1996

Legislative analysis by the computer crime and intellectual property section of the Department of Justice (P.L. 104-294, October 11, 1996) which addresses the confidentiality, integrity, and availability of data and systems and revises the Computer Fraud and Abuse Act http://www.epic.org/security/1996_computer_law.html (IRMC Assuring the Information Infrastructure Course).

<http://www-swiss.ai.mit.edu/6805/legislation/18usc1030/s982-stmt-leahy.html>

<http://www-swiss.ai.mit.edu/6805/legislation/18usc1030/s982-stmt-kyl.html>

<http://www.usdoj.gov/criminal/cybercrime/compcrime.html>.

Dangers by being despised grow great. (Edmund Burke, 1727-97, *Letter to a Member of the National Assembly*, 1791, from *The Oxford Dictionary of Quotations*, Oxford University Press, New York, 1980, p. 111, No. 33.)

National Infrastructure

Those infrastructures essential to the functioning of the nation and whose incapacity or destruction would have a debilitating regional or national impact. National infrastructures include telecommunications, electrical power systems, gas and oil transportation and storage, water supply systems, banking and finance, transportation, emergency services, and continuity of government operations (*Glossary of IM/IT & KM Terms*). The National Infrastructure Protection Center (NIPC) accumulates confidential data on infrastructure incidents including the nature of the attack, vulnerability exploited, damage sustained, suspected perpetrators, apparent source, systems affected, security in place, mitigation actions, date, and time. Defense Information Systems Agency reporting guidelines are: within 2 hours for Category 1; within 24 hours for Category 2 (unusual activity) (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

The National Infrastructure Protection Center (NIPC):

<http://fas.org/irp/agency/doj/fbi/nipc/>

NIPC legal issues: <http://www.nipc.gov/legal/legal.htm>.

The optimist proclaims that we live in the best of all possible worlds, and the pessimist fears this is true. (James Branch Cabell. *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 279.)

National Institute of Standards and Technology (NIST)—see Federal Information Technology Security Assessment Manual

Part of the Department of Commerce and formerly the National Bureau of Standards, NIST provides standards and useful publications for IT and IT security. The Computer Security Act of 1987 (CSA) (40 U.S.C. 759, P. L. 100-235, January 8, 1988) assigns NIST responsibility to devise cost-effective security and privacy standards and guidelines as assisted by NSA. NIST also maintained DES as the encryption standard in the

government until computers advanced enough so that DES was insufficient in strength to protect ciphertext. NIST publications include:

Information Management Directions: the Integration Challenge, Special Publication (SP) 500-167.

An Introduction to Computer Security: The NIST Handbook, Special Publication 800-12 (October 1995).

Telecommunications Security Guidelines for Telecommunications Management Network, Special Publication 800-13 (October 1995).

Generally Accepted Principles and Practices for Security IT Systems, Special Publication 800-14 (October 1995).

Guide for Developing Security Plans for IT Systems, Special Publication 800-18.

Self-Assessment Guide for IT Systems, Special Publication 800-XX (March 9, 2001).

Application Portability Profile (APP): The U.S. Government's Open System Environment Profile, Version 3.0 Computer Systems Technology (February 1996).

Malcolm Baldrige National Quality Award Criteria for Performance Excellence, 1998.

<http://www.quality.nist.gov/>, <http://www.asq.org/>,

<http://csrc.nist.gov/cryptval/cmvp2002/nist.html> (301) 975-3293

marianne.swanson@nist.gov (IRMC Assuring the Information Infrastructure Course, Developing Enterprise Security Strategies, Guidelines, and Policies Course, Measuring Results of Organizational Performance Course, New World of the CIO Course).

Internet Security Policy: A Technical Guide:

<http://csrc.nist.gov/publications/nistbul/itl98-02.txt>

NIST News and General Information:

http://www.nist.gov/public_affairs/siteindex.htm

http://www.nist.gov/public_affairs/contact.htm

http://www.nist.gov/public_affairs/contact.htm#contacts

<http://www.nist.gov/admin/foia/foia.htm>.

1. Engineering is done with numbers. Analysis without numbers is, at best, only an opinion. 2. To design a spacecraft right takes an infinite amount of effort. This is why it's a good idea to design them to operate when some things are wrong. 3. Design is an iterative process. The necessary number of iterations is one more than the number you have currently done. This is true at any point in time. (David Akin, professor, University of Maryland, "Akin's Laws of Spacecraft Design" [received via Internet e-mail] and confirmed by Dr. Akin dakin@umd.edu or DAKIN@SSL.UMD.EDU. See http://spacecraft.ssl.umd.edu/academics/akins_laws.html.)

National Performance Review (NPR)—see Performance Measurement

(IRMC Measuring Results of Organizational Performance Course). Vice President Al Gore's initiative to improve Government performance.

<http://govinfo.library.unt.edu/accessamerica/docs/meanbus.html>

<http://www.webmerchants.com/spectrum/npr.htm>

<http://es.epa.gov/program/exec/nprvis-d.html>

<http://www.brook.edu/dybdocroot/gs/CPS/reinventing.htm>.

When someone charged Rufus Choate with having accomplished a certain fine result by accident, he exclaimed, "Nonsense, you might as well drop the Greek alphabet on the ground and expect to pick up the Iliad." (Quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall Inc., Englewood Cliffs, NJ, June 1961, p. 13.)

National Security System (NSS)

Any telecommunications or information system operated by the U.S. government, the function, operation, or use of which: (1) involves intelligence activities; (2) involves cryptologic activities related to national security; (3) involves command and control of military forces; (4) involves equipment that is an integral part of a weapon or weapons system; or (5) is subject to subsection; or is critical to the direct fulfillment of military or intelligence missions (*Glossary of IM/IT & KM Terms*).

There once was a King who offered a prize to the artist who would paint the best picture of peace. Many artists tried. The King looked at all the pictures, but there were only two he really liked and he had to choose between them. One picture was of a calm lake. The lake was a perfect mirror, for peaceful towering mountains were all around it. Overhead was a blue sky with fluffy white clouds. All who saw this picture thought that it was a perfect picture of peace. The other picture had mountains too. But these were rugged and bare. Above was an angry sky from which rain fell and in which lightening played. Down the side of the mountain tumbled a foaming waterfall. This did not look peaceful at all. But when the King looked, he saw behind the waterfall a tiny bush growing in a crack in the rock. In the bush a mother bird had built her nest. There, in the midst of the rush of angry water, sat the mother bird on her nest ... perfect peace. Which picture do you think won the prize? The King chose the second picture. "Because," explained the King, "peace does not mean to be in a place where there is no noise, trouble, or hard work. Peace means to be in the midst of all those things and still be calm in your heart. That is the real meaning of peace." (Internet e-mail story.)

National Security Telecommunications and Information Systems Security Instruction (NSTISSI)—see International Information Systems Security Certification Consortium and System Network Assurance Program

National Training Standard for Information Systems Security (INFOSEC) Professionals (NSTISSI 4011, June 20, 1994, <http://www.ndu.edu/irmc/nstissi.html>) provides the minimum course content for INFOSEC professionals in telecommunications security and automated information system security as required by NSTISSD 501. The site also includes the NSTISSI 4009, *National Information Systems Security (INFOSEC) Glossary*; NSTISSI 4012, *National Training Standard for Designated Approval Authority (DAA)*; NSTISSI 4013, *National Training Standard for Systems Administrators in Information Systems Security (INFOSEC)*; and NSTISSI 4014, *National Training Standard for Information System Security Officers (ISSO)*. See *Security Requirements for Automated Information Systems* (DoDD 5200.28, March 21, 1988) (IRMC Assuring the Information Infrastructure Course).

<http://cryptome.org/nstissi-7003.htm>

<http://cryptome.org/nstissi-3003.htm>

<http://www.nstissc.gov/html/library.html>

<http://www.tscm.com/nstiss.html>.

19. The odds are greatly against you being immensely smarter than everyone else in the field. If your analysis says your terminal velocity is twice the speed of light, you may have invented the warp drive, but the chances are a lot better that you've screwed up. (David Akin, professor, University of Maryland, "Akin's Laws of Spacecraft Design" [received via Internet e-mail] and confirmed by Dr. Akin dakin@umd.edu or DAKIN@SSL.UMD.EDU. See http://spacecraft.ssl.umd.edu/academics/akins_laws.html.)

National Security Telecommunications Advisory Committee (NSTAC)

Established in September 1982 by Executive Order 12382; Defense Information Systems Agency director as manager of National Communications System; includes 30 chief executive officers from telecommunications and information industries; a joint government-industry partnership addressing nuclear era concerns. NSTAC serves as a model for later government-industry partnerships such as the National Security Information Exchange (NSIE). Executive Order 12472 (April 3, 1984), *Assignment of National Security and Emergency Preparedness (NS/EP) Telecommunications Functions*, established the National Communications System (group) and the Committee of Principals for the federal government coordination with NSTAC (IRMC Assuring the Information Infrastructure Course).

It is well that war is so terrible, or we should grow too fond of it. (Robert E. Lee, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 499.)

Natural Language Processing (NLP)

The process whereby a computer "understands" a human. This differs from automatic speech recognition in which a computer merely converts oral inputs into digital for display and storage. Automatic speech recognition is analogous to data management and NLP is analogous to information management (IM). The main problem with NLP lies in converting IM to KM. KM (realistic understanding) requires context recognition that is difficult for computers. The meaning of a sentence depends upon not only what, but also where, when, and how (and perhaps even who and why) it is spoken. This problem is exacerbated by the vagaries of language, especially English. Internet humor lists are replete with examples of puns or double entendres based upon the multiple and ambiguous meanings of words and phrases. Further, languages and dialects have regional expressions whose meanings are unrelated to the translations of their component words. Finally, people are also inclined to routinely use imprecise or incorrect language that, if used frequently and prevalently within a culture, results in changes in official dictionaries over time.

Babelfish translation: <http://world.altavista.com/>
<http://ai.iit.nrc.ca/subjects/Natural.html>, <http://sakharov.ai.mit.edu/Start.html>;
<http://www.sls.lcs.mit.edu/sls/about/people/root/whatwedo/root/whatwedo/root/whatwedo/root/whatwedo/applications.html> 1-877-648-8255 Pegasus (flight status);
1-888-573-8255 Jupiter (weather);
<http://babelfish.altavista.com/cgi-bin/translate> (IRMC Critical Information Systems Technologies Course).

Idealism increases in direct proportion to one's distance from the problem. (John Galsworthy, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 119.)

Navy Marine Corps Intranet (NMCI)

A Department of the Navy (DON) initiative to provide standardized IT functionality and connectivity throughout DON in the continental United States and selected other locations. It is implemented by the IT program executive officer through a competitive seat management contract with a large vendor team led by EDS Corp. It includes 35–40 percent participation by small businesses. NMCI was designed to interface with and be compatible with IT-21. Users choose between several levels of computing and service levels. To users, it resembles other “utilities,” such as water, telephone, gas, and electricity. Unit prices were low (as predicted) due to the large quantities involved (up to 400,000 seats in total). The contract is valued at approximately \$7 billion. Congressional and optical storage device concerns and directions have slowed implementation of NMCI; however, early installation has resulted in successful feedback. NMCI will provide greatly enhanced security for the DON since it incorporates public key infrastructure and digital signatures, standardized methods, smart cards, and (hopefully, in the future) biometrics. The contract includes technical upgrades based upon industry standards.

<http://enterprise.spawar.navy.mil/spawarpublicsite/> and <http://www.peo-it.navy.mil>.

Why does a man have eyes in the front of his head? ... So that he can look where he is going, not where he is coming from. (Gina Cerminara, *Many Lives, Many Loves*, William Sloan Associates, New York, 1963, p. 143.)

Need-to-Know

The necessity for access to, or knowledge or possession of, specific information required to carry out official duties. Need-to-know complements security clearances and classification. Access should reflect both of these factors.

A little knowledge is not a dangerous thing; the danger is in not being aware that it is a little. (“The Urge to Know,” *The Royal Bank of Canada Monthly Letter*, quoted in *Rosicrucian Digest*, 1974, Vol. .LII, No. 12, December, p. 23.)

Net Casting

A synonym for Web casting.

Ed Carlson, president of United Airlines: “Nothing is worse for morale than a lack of information down in the ranks. I call it NETMA—Nobody Ever Tells Me Anything—and I have tried hard to minimize that problem.” (Thomas J. Peters and Robert H. Waterman, Jr., *In Search of Excellence*, Warner Books, New York, 1982, p. 267.)

Network Centric Warfare (NCW)—<http://www.dodccrp.org/NCW/ncw.html>

NCW is based on adopting a new way of thinking and applying it to military operations. NCW focuses on the combat power that can be generated from the effective linking or networking of the war fighting enterprise. It is characterized by the ability of geographically dispersed forces to create a high level of shared battle space awareness that can be exploited via self-synchronization or self-organization to accomplish time-

urgent tasks and other network-centric operations to achieve commanders' intent. NCW is not narrowly about technology, but broadly about an emerging military response to the information age (*Glossary of IM/IT & KM Terms*) (cf. David Alberts, John Garstka, and Frederick Stein, *Network Centric Warfare*, CCRP publication). NCW is an application of systems thinking and systems engineering to military operations. Through synergy, the whole is larger than the sum of the parts. For instance, to defeat an incoming target, none of the platforms available to the commander in the battle zone may be sufficiently placed and armed to succeed. But a combination of platforms could be combined to do so. For instance, one unit might locate the target, others track it, and still others fire upon it. It also drastically reduces single-point failures and, thus success rates and survivability. With DON operations decentralized around the globe, equipment obsolescence, and shrinking infrastructure, NCW provides a better, faster, cheaper alternative to more traditional attrition warfare.

Thought is the blossom; language is the bud; action is the fruit behind it. (Ralph Waldo Emerson, *Capital M*, Metropolitan Washington Mensa, 1994, Vol. 29, No. 5, May, p. 2.)

Networked Improvement Community (NIC)—see Section 508, Value-Added Networks, and eXtensible Markup Language (XML)

Collaborative workspaces that combine the functionality of Internet chat rooms with the document-storage capabilities of a KM system. They facilitate the creation of more meaningful partnerships among state and local providers of government services, community groups, businesses, nonprofit organizations, and the public. Businesses are the most sophisticated users of NICs, which help them manage customer and partner relationships. A good example is the Open Electronic Book Forum (OEBF) that includes traditional media publishers, electronic publishers, hardware manufacturers, software developers, and various other organizations, including disability organizations and access-technology providers. The purpose of OEBF is to create and establish XML standards for electronic book technology and to promote this technology. OEBF books produced by any publisher will be readable on any manufacturer's OEBF-compliant device. The agreements necessary for cross-platform compatibility are critical to success. All partners know that multiple approaches taken independent of one another will result in market failure.

NICs that take advantage of Internet-based collaborative workspaces are one of the best approaches available to government program managers who are looking to create innovative e-government projects that will mitigate digital disparities. Innovative e-government projects exhibit several common characteristics, including the use of public-private partnerships, alliances with stakeholders, interagency cooperation, and a focus on end users. These characteristics, all of which show openness to accommodating difference, are inherently citizen-centric, and fit naturally within the current e-government mandates. Collaborative workspaces can play a successful role in fostering an end-user focus by providing government program managers with the networked improvement community space needed to build public-private partnerships and stakeholder alliances as well as to enhance interagency cooperation. Collaborative workspaces do this by combining the functionality of Internet chat rooms with the

document storage capabilities of a KM system. These spaces also allow the government to interact with a broader segment of the public, many of who are currently the most under-served in terms of government goods and services. This interaction can help both entities by allowing the under-served to become partners in innovation with the government and help it identify new tools and technologies to provide greater access to information.

A recent successful government application of the NIC approach was the Environmental Protection Agency's (EPA) online dialogue held in July, 2001, which was directed at certain groups, including consumers, environmental and advocacy groups, and minorities. EPA used the online dialogue, which attracted 1,200 users, to gather comments on EPA's draft public involvement policy. The dialogue was structured in a manner similar to an in-person meeting, starting each day in the morning with an online posting of the daily topic, an introduction, and comments made by a panel of experts. Approximately 100 to 200 messages were received each day, subsequently summarized, and then sent to all of the participants. While the dialogue did not replace the traditional Federal Register publication and respective comment period, it did allow EPA another venue in which to gather and share stakeholder comments. (Susan Turnbull, *Extending Digital Dividends: Public Goods and Services that Work for All*, the Federal Architecture and Infrastructure Committee of the Federal CIO Council's guide, on the Federal CIO Council Knowledge Management Working Group CD, distributed by the DON CIO (Susan Turnbull, 202-501-6214, susan.turnbull@gsa.gov).

War talk by men who have been in a war is always interesting; whereas moon talk by a poet who has not been in the moon is likely to be dull. (Mark Twain, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983 p. 181.)

Neural Networks (NNs)

A type of artificial intelligence that mimics human neural processing. These networks look for data patterns useful for classification, predicting, and forecasting. They are used for data mining and exploration, fraud detection, and medical diagnoses (e.g., papnet, lung cancer, autism). They use past examples of solved problems to deduce patterns. They are better than expert systems for hidden and difficult-to-discern patterns. A neural network is "trained," like a child, using a multiplicity of instances of past occurrences. Inputs and outputs are known, but the relationship between them is unknown or unclear. About 90 percent of the cases are used to construct or instruct the neural network, and the other 10 percent are used to test it. Papnet is a NN that classifies pap smears as cancerous or not. While Papnet costs \$25 more than using a human, it has only a 3 percent false negative rate versus up to 50 percent for humans. Most credit card companies now use NNs to detect fraud. See <http://www.wardsystems.com> and <http://www.brainmaker.com> (IRMC New World of the CIO Course). <http://ai.iit.nrc.ca/subjects/Expert.html>; <http://www.nd.com/index.htm> (IRMC Critical Information Systems Technologies Course).

Most men would rather die, than think. Many do. (Bertrand Russell, quoted by Jim Collins, *Good to Great*, Harper Business, New York, 2001, p. 144.)

Nodes

Nodes are the components of a network. In social network analysis, people or employees are the nodes. The nodes are connected by channels along which knowledge, information, and data flows. In an IT network, computers, servers, routers, and other elements make up the set of nodes. Nodes can vary considerably in function and importance to the overall system. For instance, Malcolm Gladwell, in *The Turning Point*, describes several types of social network nodes of primary importance to creating paradigm or culture shifts within an enterprise. He calls these connectors, mavens, and salesmen.

Learning without thought is labor lost; and thought without learning is perilous.
(Confucius, *The Wisdom of Confucius*, Peter Pauper Press, Mt. Vernon, NY, 1963, p. 42.)

NonLinear Systems (NLS)—see Systems Thinking

A nonlinear system (or equation) is any system (or equation) that is not linear. Linear equations are of the form $y = ax + b$ where x is the independent variable (horizontal axis); a is the slope of the line; and b is the intercept (a constant) on the y (vertical) axis. In a linear equation, there is only one independent variable (or factor) and the result is a straight line, either ever increasing (/) or ever decreasing (\). Nonlinear systems or equations have more than one variable. Human characteristics virtually always map onto the normal distribution (Gaussian distribution) that can be described by the mean (or average, u) and the standard deviation. Thus the normal distribution has 2 variables and is nonlinear. While many people use linear approximations, very few situations in reality are linear. Even the temperature versus volume of water is nonlinear, since water expands near the freezing point. Therefore, linear approximations to reality are almost always unjustified and inaccurate. Rather, reality is based upon complex systems (sometimes called chaotic systems). Systems thinking is an approach to deal with nonlinearity. Malcolm Gladwell describes real-world nonlinear effects in *The Tipping Point*; it has also been called the butterfly effect (IRMC Leadership for the 21st Century Course). Linear systems are related to the process of analysis wherein a whole is decomposed into its parts to attempt to describe and understand it. Nonlinear systems are related to the opposite process of synthesis (or integration), in which a whole is created synergistically from its parts that are related by their interactions with each other and with the whole.

Linear Versus Nonlinear Systems Compared

	Variables	Shape	MBTI	Process	Sampling	Scope	Management
Linear	One	Straight line	ST	Analysis	Discrete	Simple	Stovepipes
Nonlinear	Many	Curved line	NF	Synthesis	Statistical	Complex	IPTs

By introducing the unavoidable involvement of the observer in the effect, the Heisenberg uncertainty principle has necessarily eliminated linear systems as a viable model for modern physics.

Life is not only rational. You are not fully adapted to life by a merely rational attitude. To a certain extent you have to keep your senses open to the nonrational aspects of

existence. (C. G. Jung, *Letters*, Vol. 1, Bollingen Series 95, 1906–50, Gerhard Adler and Aniela Jaffe, Eds., Princeton University Press, Princeton, NJ, 1953, p. 359, 2ff.)

There are no straight lines in nature. (Stephen Denning, *The Springboard*, Butterworth-Heinemann, Boston, 2001, p. 108.)

Nonrepudiation

A system with nonrepudiation provides the sender with proof of delivery and the recipient with proof of the sender's identity. Thus, neither can later deny having processed the data. Nonrepudiation is the "N" in the information assurance acronym, CIANA (confidentiality, integrity, availability, nonrepudiation, and authentication), which itemizes the major factors in computer security. Public key infrastructure (PKI) with digital signatures and hashes provides nonrepudiation. Under recent Presidential directives, digital signatures will be accepted as legal proof of signature for all but a handful of specified documents. This change in policy should greatly alleviate some of the roadblocks to electronic business and commerce. Presently, Internet merchants use secure socket layer (SSL) encryption to protect the buyer's order and credit card number, but have no assurance that the buyer is legitimate. They can only rely on the validity of the credit card used and take reasonable risks to make their sales. Widespread use of PKI and digital signatures would afford merchants a distinct reduction in transmission/ordering risk—though the risks to digital certificates would remain.

"You look a little drawn," he said. "I feel drawn. By an artist with a broken arm." (Doug Allyn, *Icewater Mansions*, St. Martin's Press, NY, 1995, p. 193.)

O

Object-Oriented Programming (OOP)

A programming method that combines data and software instructions into a self-sufficient "object" that can be used by several programs. Java and C++ (*the* modern programming languages) are OOPs.

<http://catalog.com/softinfo/objects.html>

<http://www.traininghott.com/Courses/Object-Oriented-Analysis-Design-Hands-On-Training-Course-Class-Seminar-OOAD-OO.htm>

<http://www.quiver.freemove.co.uk/OOP1.htm>

http://webopedia.internet.com/TERM/o/object_oriented_programming_OOP.html.

The path to paradise leads through the world of reality. (Rebbe Naphtali of Ropshitz [the Ropshitzer], quoted by Elie Wiesel in *Four Hasidic Masters*, University of Notre Dame Press, London, 1978, p. 110.)

Office of Management and Budget (OMB)—see A-11, A-76, and A-130

OMB is a federal executive agency that provides policy across the executive branch (the Departments of the Cabinet etc.). OMB has issued several circulars directly affecting IT.

An Abbot Labs executive said: "Planning is priceless, but plans are useless." (Jim Collins, *Good to Great*, Harper Business, New York, 2001, p. 123.)

OnLine Analytical Processing (OLAP)

OLAP is a software technique for performing data mining functions. It is a complement to online transaction processing (OLTP). It enables a user to easily and selectively extract and view data from different points of view. For example, a user can request that data be analyzed to display a spreadsheet showing all of a company's beach ball products sold in Florida in the month of July, compare revenue figures with those for the same products in September, and then see a comparison of other product sales in Florida in the same period. To facilitate this kind of analysis, OLAP data is stored in a "multidimensional" database (adapted from *Glossary of IM/IT & KM Terms*). OLAP can be applied to data warehouses or data marts. Some vendors claim to have data mining tools significantly superior to OLAP. OLAP allows users to drill down—obtaining more granular views of the data as well as to slice and dice—flip data dimensions around to get a new perspective of the data (i.e., cross tabulate it) (IRMC New World of the CIO Course). OLAP applications include: executive information systems, spreadsheet analysis, trend analysis, ad hoc and periodic reporting, presentations, and policy analysis. Uses include: financial modeling, exception reporting, resource allocation, capacity planning, variance analysis, customer and product profitability analyses, promotion planning, sales forecasting, and market share analysis. Types include: desktop (DOLAP) for use on personal computers; relational (ROLAP), which creates data tables from which users build cubes; and multidimensional (MOLAP), which stores data in prebuilt

multidimensional data cubes. But individual OLAP tools do not provide full functionality, OLAP lacks standards, and the three types are not interoperable. See "Web OLAP-related Publications" <http://www.cognos.com/>, <http://altaplana.com/SuperSTAR.html> and <http://www.businessobjects.com/> (IRMC Data Management Strategies and Technologies Course).

From Gary Hacker's *HR Metrics News* consolidated from Issues 1-5 (OPM):

FedScope: www.fedscope.opm.gov 12/01. *FedScope* is an On Line Analytic Processing tool that provides a free and easy way to access and analyze a large array of Federal employment data on your own.

Fishing for fresh thoughts in a pool of memories. (Stephen Denning, *The Springboard*, Butterworth-Heinemann, Boston, 2001, p. 57.)

OnLine Transaction Processing (OLTP)

A real time software/network that permits transactions to be entered and retrieved by computer. It is used in many business applications such as rental car companies, consumer sales, credit card checks, airline reservation systems, etc. (IRMC Data Management Strategies and Technologies Course).

Like most overnight successes, it was about twenty years in the making. (Sam Walton, Wal-Mart, quoted by Jim Collins, *Good to Great*, Harper Business, New York, 2001 p. 191.)

Open System—see Systems Engineering

An open system is a system that is not self-contained but rather interacts directly with its environment. Thus, open systems are best measured through outcome versus output metrics. Open systems are facilitated by the use of standard interfaces, services, and supporting formats that are often provided by standard contractor off-the-shelf applications (such as Netscape or Internet Explorer). Open systems interoperate with other, frequently remote, systems and users. With the decline of military specifications and standards, the joint technical architecture (JTA) was created to itemize well-defined, widely used, preferably nonproprietary interfaces and protocols, standards that are developed or adopted by recognized standards bodies or the commercial marketplace, defined system interfaces to facilitate new or additional systems capabilities for a wide range of applications, and explicit provisions for expansion or upgrading through the incorporation of additional or higher performance elements with minimal impact. Open systems are made adaptable through implementation of open systems architectures that allow addition, subtraction, and modification of system elements without major modifications. While the use of standards facilitates establishment and maintenance of open systems, legacy systems can be transitioned to open systems through judicious use of middleware that is often the only cost-effective method for such systems. See L. von Bertalanffy's "The Theory of Open Systems in Physics and Biology" (*Science*, 1950, 3, pp. 23-9). Open systems are sometimes referred to as standards-based systems (IRMC Advanced Software Acquisition Management Course).

A mind is like a parachute, it only functions when it's open. (Defense Systems Management College, Manufacturing Management Department Quote of the Day No. 3.)

Open systems joint task force: <http://www.acq.osd.mil/osjtf>

Open Systems: The Promises and the Pitfalls:

<http://www.sei.cmu.edu/products/courses/open.systems.html>.

Operating System (OS)

An operating system is a software program that interacts directly with the hardware, creating an environment for applications packages. Operating systems are, therefore, computer (actually processor) dependent. For instance, operating systems for IBM personal computers (PCs) differ from those for Macintosh computers. However, a particular software manufacturer will often produce different versions of an operating system to run on different kinds of computers. Thus there are Microsoft Windows versions for both PCs and Apple computers. The operating system controls the execution of software on the computer and provides several services such as resource allocation, scheduling, input and output control, and data management. Windows operating systems have replaced disk operating systems (DOS) in virtually all, modern personal computers, transforming them into interactive systems, versus serial processors.

21. (Larrabee's Law) Half of everything you hear in a classroom is crap. Education is figuring out which half is which. (David Akin, professor, University of Maryland, "Akin's Laws of Spacecraft Design" [received via Internet e-mail] and confirmed by Dr. Akin dakin@umd.edu or DAKIN@SSL.UMD.EDU. See http://spacecraft.ssl.umd.edu/academics/akins_laws.html.)

Operational Architecture (OA)—see Architecture

A description (often graphical) of the operational elements, assigned tasks, and information flows required to support the warfighter. It defines the type of information, the frequency of exchange, and what tasks are supported by these information exchanges (Information Management [IM] Strategic Plan: Information Superiority version 2.0, DoD CIO, October 1999, p. E36) (IRMC Measuring Results of Organizational Performance Course). An OA defines the type of information, the frequency of exchange, and what tasks are supported by these information exchanges. Its primary purpose is to define activities and information exchange requirements (IERs). OAs start with doctrine and assigned tasks that drive the definition of an activity model. Activity descriptions are not based on organizational models or force structure. Activity descriptions (which may cross organizational boundaries) are used to define the data model and IERs (which cross organizational boundaries). OAs are systems-dependent (IRMC Advanced Software Acquisition Management Course).

Those who know how to win are much more numerous than those who know how to make proper use of their victories. (Polybius [c.208-126 B.C.], *History*, X, 36 from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 107.)

Operational Definition

A description for a measurement that defines the operational means by which data will be collected and the rules or procedures by which numerical values will be assigned to cases being measured (IRMC Measuring Results of Organizational Performance Course).

More generally, of course, introducing the "knower"—or meaning of an "observation"—into the measurement process puts us in direct conflict with some fundamentals in the philosophy of science. With the notable exception of Heisenberg's uncertainty principle in quantum mechanics, the whole point of measurement theory is to remove the knower from the process. Yet, it is precisely context that gives meaning to information—thus creating knowledge—and results in different knowers valuing the superficially "same" piece of knowledge differently. Measuring the knower involves incorporating notions such as "context" and "subjective interpretation"—traditionally the domain of psychology and other "softer" disciplines—into our formal investigations. (Rashi Glazer, "Measuring the Knower: Towards a Theory of Knowledge Equity," *California Management Review*, Berkeley, CA, Spring 1998, Vol. 40, Issue 3, pp. 175–194.)

Operations SECurity (OPSEC)

Process denying information to potential adversaries about capabilities and intentions by identifying, controlling, and protecting sensitive information from unauthorized access and manipulation.

Most victories come from instantly exploiting your enemy's stupid mistakes, and not for any brilliance in your own plan. (Orson Scott Card, *Shadow of the Hegemon*, Tom Doherty Associates, New York, 2000, p. 111.)

Optical Fiber (or Fiber Optic)

Refers to the medium and the technology associated with the transmission of information as light pulses along a glass or plastic wire or fiber. Optical fiber carries much more information than conventional copper wire and is in general not subject to electromagnetic interference and transmission errors. Most telephone company long-distance lines are now of optical fiber (*Glossary of IM/IT & KM Terms*).

Seeing is an art; it must be learned. (John Constable, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 53.)

Optical Storage Device (OSD)

OSDs use light to record data. They include compact disks-read-only memory (CD-ROM) of 660 Mb, compact disk-recordable (CD-R), compact disk-re-writable (CD-RW), and digital versatile disk (DVD). CDs use 1.6 x .83 micron spacing; DVDs use .74 x .4 micron spacing. DVDs hold about 8 times the amount of CDs = 4.7 Gbytes of information, enough for a 133-minute movie. It can hold 17 gigabytes of video, audio, or multimedia with two layers on each of its two sides. DVD drives play CDs as well, but not vice versa. The DVD transfer rate is faster than that of CDs. DVD-RAM (DVD Forum-Hitachi, Toshiba, etc.) for video versus DVD+RW (HP/Philips/Sony) for computer data and data interchange. At present no standard format exists. Magneto-optical disks (MO disks) are re-recordable and easily transportable; they have high capacity and relatively high access

speeds. A 5-inch MO disk holds 650 Mb, 1.3 Gb, or 2.6 Gb, but must be manually flipped. They use both magnetic and optical technologies to obtain ultra-high data density (IRMC Data Management Strategies and Technologies Course).

Good products don't make winners; winners make good products. Look at *how* tasks are performed. Who's responsible? (Michael Hammer and James Champy, *Reengineering the Corporation*, Harper Business, New York, 1993, p. 25.)

Orange Book—Trusted Computing System Evaluation Criteria (TCSEC)

DoD-STD 5200.28, from National Security Agency's Rainbow series, the security standard that has an orange cover and so was dubbed "the orange book." It is overkill for sensitive but unclassified (SBU) systems, does not favor contractor off-the-shelf or open systems, and is being evolved into an international standard (the common criteria) which attempts to extend the functionality and applicability of trusted methods to networked systems. Also see *National Industrial Security Program Operating Manual* (NSPOM, DoD-STD 5220.22-M) (IRMC Advanced Software Acquisition Management Course).

The Trusted Computer System Evaluation Criteria (TCSEC)

Protection Level	Minimal (D)	Discretionary (C)	Mandatory (B)	Verified (A)
Sublevel 1	No D1	Discretionary security	Labeled security	Verified design
Sublevel 2	No D2	Controlled access	Structured	No A2
Sublevel 3	No D3	No C3	Security domains	No A3
Features	No features	Identification and authentication Discretionary access controls Object reuse Audit Security testing System architecture (process isolation)	Labels Mandatory access control Design specification and verification Covert channel access Trusted facility management Configuration management Security testing (penetration) System architecture (SWE) Trusted recovery	Design specification and verification (formal verification) Trusted distribution Covert channel analysis (formal covert channel analysis)

To obtain a free copy, contact Rainbow Series, INFOSEC Awareness Division, Attn: IAOC, Ft. George G. Meade, MD, 20755-6000; 410-766-8729.

We never punish failure. We only punish sloppy execution and the failure to recognize reality. (Bruce Marlow, chief operating officer of Progressive Insurance.)

Management systems should reward people who try good ideas that fail, not punish them. At Motorola the motto is, "We celebrate noble failure." (Michael Hammer and James Champy, *Reengineering the Corporation*, Harper Business, New York, 1993, p. 106.)

Ordinal Rating Scale—see Likert and Comparative Scales and Questionnaires

A scale used in questionnaires and rating forms in which the respondent merely checks off or circles the point in the scale that, in his or her opinion, best answers the question posed by the item. One point in the scale represents a higher or lower value than the one next to it, but the amount of the interval between scale points carries no meaning (IRMC Measuring Results of Organizational Performance Course). The alphabet can be used as an ordinal scale—the letters have a given order but no relative value. It represents a low level in the theory of measurement or numbers. Beyond the ordinal system is the integer system (using whole numbers only) in which the difference between the items (numbers) has meaning—invoking many of the laws of arithmetic. Centigrade and Fahrenheit also include negative and fractional numbers but are still relative scales. Beyond them is the ratio scale (e.g., Kelvin temperatures) that has a true zero so that the ratios formed from the items in the scale are meaningful. In other words, 40 degrees Fahrenheit or Centigrade is not twice as hot as 20 degrees, but it is twice as hot in Kelvin. An ordinal scale could be: 3 = high, 2 = medium, 1 = low.

It is well said that there are three of every man: That which he is, that which he only thinks he is, and that which he really had intended to become. (Ernest Bramah, *Kai Lung Unrolls his Mat*, Ballantine Books, New York, 1974, p. 87.)

Organizational Learning—see Learning Organization

The continuous testing of experience and the transformation of that experience into knowledge, accessible to the organization and relevant to its core purpose. (*Glossary of IM/IT & KM Terms*, DON CIO) The capacity of an organization to acquire the knowledge necessary to survive and compete in its environment (DON CIO's Organizational e-Learning CD). Of course, organizations, as artificial human constructs, cannot actually think or learn—so this term is metaphorical. Nevertheless, through judicious use and maintenance of such devices as knowledge repositories, organizations can accumulate knowledge. Presently, only individual humans can actually translate information into knowledge, actually learn, let alone achieve wisdom. Organizations cannot create high-performing systems (HPSs) or flow either, but they can have atmospheres or cultures which facilitate or are conducive to flow and HPSs.

Several KM and management books address this situation including: *In Good Company* by Don Cohen and Laurence Prusak and, *In Search of Excellence* by Thomas J. Peters and Robert H. Waterman, Jr. From a slightly different perspective, however, organizational learning can be viewed as learning through collaboration. Group learning, such as brainstorming and the use of decision collaboration tools (such as used, for instance, at the National Defense University), can be viewed as intermediary between individual and organizational learning. Organizational learning in a real, versus theoretical, sense may be limited by the size of the organization. Several authors have asserted that organizations must be limited to 150 to 200 people to optimize human interaction—despite physical economies of scale. The limitation cited is that each person must be able to identify or know each other person. The organization might, for instance, be a plant or facility. Like microorganisms or bees, such companies or enterprises will split into parts when they

exceed this preset limitation. Additional research is needed in this area regarding organizational sizes, Myers-Briggs preferences, flow, etc.

The Society for Organization Learning: <http://www.solonline.org/>.

Only a thing that changes and evolves lives, but static things mean spiritual death. (C. G. Jung, *Letters*, Vol. 2, Bollingen Series 95, 1951-61, Gerhard Adler and Aniela Jaffe, Eds., Princeton University Press, Princeton, NJ, 1953-75, p. 711.)

No one ... is so young he cannot teach or so old he cannot learn. (Marion Zimmer Bradley, *The World Wreckers*, Ace Books, New York, 1971, p. 61.)

Outcome Measure(s), Outcomes—see Feedback and Metrics

Measurements relating to the results of the customer using the organization's products and services (IRMC Measuring Results of Organizational Performance Course). "An outcome is the resulting effect of the investment on mission accomplishment" (Defense Information Systems Agency *Performance Planning Guidance* for Fiscal Year 1998, p. 4). A measure of mission accomplishment effectiveness involving external entities or customers.

Only a life lived for others is a life worthwhile. (Albert Einstein, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall Inc., Englewood Cliffs, NJ, June 1961, p. 408.)

Output Measure(s), Outputs—see Feedback and Metrics

Measurements of the quantity, quality, or timeliness of work products and services provided by the organization and supplied to the customer and target users (IRMC Measuring Results of Organizational Performance Course). Output measures are generally internal measures within a system and do not adequately reflect system or organizational effectiveness.

Q. E. D. = *quod erat demonstrandum* (Which it was necessary to demonstrate). (Euclid [300 B.C.] *Elements*, proposition 5, from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 103b.)

P

Packet

A small, self-contained parcel of data sent across a computer network or communications line. Each packet contains a header that identifies the sender and recipient and data to be delivered (from *Glossary of IM/IT & KM Terms*).

Epigrams succeed where epics fail. (Persian proverb, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 84.)

Packet Filtering

Process whereby a firewall prohibits connection to untrusted or undesired sites by filtering packet requests. Sites can be Internet Web sites or e-mail senders and receivers.

Protection? I'd be safer dancing Swan Lake in a buffalo stampede. (Doug Allyn, *Icewater Mansions*, St. Martin's Press, NY, 1995, p. 191.)

PalmTM

The trade name for a popular, handheld personal digital assistant (PDA) or palmtop computer. Originally the Palm, which is used mainly for personal organization, wireless e-mail, note-taking, and electronic games, was called the Palm Pilot. It was introduced in 1996 by Palm Computing, Inc. There are various versions with increasing capabilities (adapted from the *Glossary of IM/IT & KM Terms*).

The leader must have authority over the resources involved in performing the division's processes. A leader is someone who makes [people] *want* what he or she wants. (Michael Hammer and James Champy, *Reengineering the Corporation*, Harper Business, New York, 1993, pp. 103-105.)

Paperwork Reduction Act (PRA) of 1995 (revision of original 1987 version), P. L. 104-13
<http://www.rdc.noaa.gov/~pra/pralaw.htm> 44 U.S.C. 35.

It required agencies to have a single point of contact (senior information resources management [IRM] official) responsible for all agency information and reporting directly to the agency head. Responsibilities included: integrative information management planning (electronic collection and dissemination of information, records management, and safeguards) and IT management (performance evaluation and analysis, strategic and operational planning, IT acquisition and oversight, IT use). It also included basic definitions of data, information, records, life cycle, etc. IT processes were to be reviewed annually by the Office of Management and Budget (OMB) via an annual agency report.

It requires OMB to "ensure ... the efficiency and effectiveness of inter-agency IT initiatives to improve agency performance and the accomplishment of agency missions" (Defense Information Systems Agency, *Performance Planning Guidance for Fiscal Year 1998*, p. G-3) (IRMC Measuring Results of Organizational Performance Course). It created the Office of Information and Regulatory Affairs (OIRA) in OMB to establish government-wide IRM policies and oversee and review agency implementation. It requires federal

agencies to use risk management to provide security protection per the Computer Security Act (IRMC Assuring the Information Infrastructure Course).

No act of kindness, no matter how small, is ever wasted. (Aesop, "The Lion and the Mouse," *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 75b.)

Paradigm

An overarching frame of reference (including a set of assumptions) under which one operates; worldview. Thomas Kuhn's popularized the paradigm process of the philosophy of science described in his classic masterpiece, *The Structure of Scientific Revolutions*.

Any hypothesis, however absurd, *may* be useful in science if it enables a discoverer to conceive things in a new way; but that, when it has served this purpose by luck, it is likely to become an obstacle to further advance. (Bertrand Russell, *A History of Western Philosophy*, Touchstone Books, Simon & Schuster, New York, 1945, p. 131.)

Pass Phrase

A sequence of characters, longer than the acceptable length of a password that is transformed by a password system into a virtual password of acceptable length (*Glossary of IM/IT & KM Terms*). Pass phrases can be used for computer logon.

Process change ripples into universal organizational change. Seek a catch-phrase which is clear, elegant, and eye-opening. (Michael Hammer and James Champy, *Reengineering the Corporation*, Harper Business, New York, 1993, p. 181.)

Password

A string of keyboard characters used to identify a user for logon into a computer system. The password is usually six to eight characters in length. Some systems used fixed-length passwords; others allow users to choose the length. Passwords that use only alphabetic letters are very weak and can be broken by automated dictionaries used by hackers. Strong passwords use case-sensitive letters (some small, some capitals), numbers, and special characters. Information systems can enforce strong password policies automatically, disallowing users from choosing passwords that do not meet strength criteria. Password life is also controlled, requiring regular replacements by all users. This procedure, however, is ineffective against hackers who have already obtained a user password. Strengthening passwords makes memorizing them far more difficult and creates a diminishing returns scenario. Users are far more likely to write down their passwords if they are difficult to remember. Also, it has been noted that local area network administrators spend an inordinate amount of time dealing with users who have forgotten their passwords. This increases the risk of social engineering as well. Use of smart cards (tokens) and biometrics can alleviate or even eradicate this problem. Someday passwords may become an historical anomaly. Presently, however, they are the main procedure for user logon, both onsite and offsite.

Password changing is a good example of an illusion of security. If the password system is strong or quickly aged, users will write them down or use the "save my password" option. If the process becomes too complex, users will invalidate the entire

system (Girard, O'Reilley, and Smith, "Remote Access Security: Everything You Know is Gone," *Gartner Group Strategic Analysis Report*, 7/28/98R-05-4104, which includes security worst and best practices) (IRMC Assuring the Information Infrastructure Course). Password files must be protected (encrypted); auto-logon scripts should be disallowed; password files should be purged when people leave; passwords can also be supplemented with biometrics such as fingerprints (now available in mousse) or retinal scans (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course). Personal identification numbers and passwords have been used to provide access to corporate networks, but these methods do not offer the strong proof of identity, data confidentiality, or data integrity needed to conduct high-value commerce online ... it is not adequate for high-value, business-to-business transactions. Also, it is a risky technology when securing highly personal information, such as medical or financial records¹⁵ (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course author's final paper, *PKI Vulnerabilities*).

It is as easy to recall a stone thrown violently from the hand as a word which has left your tongue. (Menander [343-292 B.C.], *Fragment 1092k* from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 123.)

Peer-to-Peer (P2P)

This refers to client sharing services such as Napster and Gnutella wherein computers in the network act as servers to other users on the network. People signing up for such services allow outsiders to view the contents of their computers—not just the MP3 music files. Such files themselves could contain Trojan horses or other malware. Indeed, the rock band "Barenaked Ladies" planted a nonmalicious Trojan horse in their music protesting its unauthorized use. P2P circumvents copyright laws and also opens users up to significant security and privacy risks. Thus, some network administrators are blocking access to P2P sites and downloads of MP3 files.

The courts have found P2P to be legal in general though Napster was found guilty—by overstressing the "fair use" laws that allow individuals to duplicate copyrighted materials for personal use. A company can allow swapping of information without liability if it does not know copyrighted material is being illegally swapped and doesn't have a reasonable way to stop it (e.g., AOL with e-mail) (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

An idea isn't responsible for the people who believe in it. (Don Maquis, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 241.)

Pendulum Effect or Principle

The human tendency to overcompensate for a detected problem or symptom thereof. Peter Senge describes it in *The Fifth Discipline*. For instance, the costs and benefits of centralization and decentralization are similar, but organizations (especially as management or administrations change) tend to flip-flop from one to the other. Unfortunately, people tend to be proponents of a position, emphasizing the positive side of their position and the negative side of the opposition's position. Such a "debate" approach obscures the net value of the positions and is, thus, antithetical to decision

theory (e.g., the scientific method). The pendulum effect is opposed to the principle of balance. Following the aircraft attacks on the Pentagon and World Trade Center, airport security workers began confiscating from passengers everything sharp, including corkscrews and fingernail clippers. It is darkly humorous to envision such an attack—a handful of terrorists armed with fingernail clippers versus a plane full of passengers. Events in Pennsylvania argue otherwise.

Everything tends sooner or later to go over into its opposite. Heraclitus (c. 500 B.C.) called this process of psychological, historical, and cosmogonic overbalancing *enantiodromia*, "running the other way." (Carl G. Jung, *Two Essays on Analytical Psychology*, London: Bailliere, Tindall and Cox, 1928, pp. 188–189, quoted by Joseph Campbell in *Occidental Mythology*, Volume 3 of *The Masks of God* tetralogy, Penguin Books, New York, 1988, p. 160.)

Every reform, however necessary, will by weak minds be carried to an excess, that itself will need reforming. (Samuel T. Coleridge, *Biographia Literaria*, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall Inc., Englewood Cliffs, NJ, June 1961, p. 332.)

Penetration Test

The intermediate level of information security testing (audit is the lower level; red team attack is the higher level). The Government Accounting Office conducted penetration tests against the State Department in 1998. Penetration tests are conducted to assess how susceptible a system is to unauthorized access. They also reveal whether the system detects unauthorized access attempts. They provide empirical evidence of system vulnerabilities to management; provide a method for testing complex, diverse, and interconnected systems; enhance the computer security audit with more comprehensive results in a more efficient and effective manner. Penetration test teams may have some priori knowledge of the system. The major considerations are: scope (what is to be tested, when, end points, locations, who performs, who monitors, tools and techniques), risks (minimize to acceptable level—no denial of service, have site personnel monitor and coordinate, log test parameters and results, use nonpeak hours if necessary), roles and responsibilities (auditors, test team, contractors, system owners, security officer, system administrators), logistical requirements (IP address and telephone ranges, control of classified or sensitive material, user accounts, passwords, and access levels, network connections, equipments), tools and techniques (select ones to be used) (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

Parker's Law: Beauty is only skin deep, but ugly goes clear to the bone. (Quoted by Robert Byrne in *The 637 Best Things Anybody Ever Said*, Atheneum, NY, 1982, #344.)

Performance- and Results-Based Management—see Balanced Scorecard, Metrics, Feedback, Quality, Software, and Strategic Planning

One of the 10 federal CIO competencies, specified by the Federal Chief Information Officer Council Executive Board, included in the IRMC's curriculum for the CIO certificate. It is addressed in the Government Performance and Results Act (GPRA), which requires agencies to provide an annual performance plan that must include: performance goals; description of processes, technologies, human, capital, and information resources

required; description of performance indicators; comparison of actual performance against goals; and methods used to validate measurements. GPRA also requires a past year(s) performance report which includes: review of achievement of performance goals; evaluation of the plan for the current year; and explanations of the deltas. This report builds up to a 3-year report. GPRA addresses the differences between outputs (akin to performance) and outcomes (akin to results).

A model for assessing an agencies performance is the 4As: accountability, alignment, awareness, and adaptability (IRMC New World of the CIO Course). It is the process of basing organization actions and decisions on actual measured results of performance. See the Department of Defense's User's Guide: DoD Performance Assessment Guide (version 1.0, February 1995); Department of Energy's Defense Programs Special Projects Group (DP-31) and Environment, Safety, and Health Office of Operating Experience, Analysis, and Feedback (EH-33), *How to Measure Performance: A Handbook of Techniques and Tools* (October 1995); GSA Office of Policy, Planning and Evaluation's *Eight Steps to Developing and Using IT Performance Measures Effectively* (February 1997); National Performance Review's *Best Practices in Performance Measurement: Benchmarking Study Report* (June 1997); Robert Austin's *Measuring and Managing Performance in Organizations* (Dorset House Publishing, New York, 1996); Halloway, Lewis, and Mallory's *Performance Measurement and Evaluation* (Sage Publications, London, 1995); Kinghorn, Anderson, et al.'s *Report by a Panel of National Academy of Public Administration for the U.S. DoD: IM Performance Measures—Developing Performance Measures and Management Controls for Migration Systems, Data Standards, and Process Improvement* (Washington, DC, 1996); B. Frost's *Measuring Performance* (Fairway Press, Lima, OH, 1998); and Wholey, Hatry, and Newcomer's *Handbook of Practical Program Evaluation* (Jossey-Bass, San Francisco, 1994);

<http://www.itpolicy.gsa.gov/mkm/pathways/pathways.htm>;

<http://www.treas.gov.ab.ca/comm/perfineas/measupgu/index.html>;

<http://tql-navy.org/survey/index.html>.

Performance measurement sites:

<http://newark.rutgers.edu/~ncpp/cdgp/Manual.htm>

<http://www.co.fairfax.va.us/dmb/basic%5Fmanual%5F2001.pdf>

<http://www.co.fairfax.va.us/dmb/basic%5Fmanual%5F2002.pdf>

<http://www.co.fairfax.va.us/dmb/perf%5Fmeasure.htm>

<http://www.co.fairfax.va.us/dmb/pflinks.htm>

http://www.co.fairfax.va.us/gov/omb/PERF_MEASURE.htm

<http://www.ndu.edu/irmc/>: NDU course on measuring organizational performance, DCMC Guidebook. See GAO/AIMD-97-163 *Executive Guide: Measuring Performance and Demonstrating Results of IT Investments* (exposure draft, September 1997) and GSA's *Performance-Based Management: Eight Steps to Develop and Use IT Performance Measures Effectively* <http://www.itpolicy.gsa.gov/mkm/pathways/pathways.htm>;

Meyer's "How the Right Measures Help Teams Excel," *Harvard Business Review*, May-June 1994, p. 95;

Bishop, Yoes, and Hamilton's *Performance Measurement for Information Systems: Industry Perspectives* (University of Houston-Clear Lake, October 30, 1992);

Brynjolfsson's "The Productivity Paradox of IT," *Communications of the Association of Computing Machinery (ACM)* (1993, December, p. 67);

Katz's "Measuring Technology's Business Value," *Information Systems Management* (Winter 1993);

Keen's *Shaping the Future: Business Design Through IT* (Harvard University Press, Cambridge);

National Academy of Public Administration (NAPA)'s *Information Management Performance Measures—Developing Performance Measures and Management Controls for Migration Systems, Data Standards, and Process Improvement*, report for DoD, January 1996 (202-347-3190);

Balancing Measures: Best Practices in Performance Management, August 1999, National Partnership for Reinventing Government, (IRMC Measuring Results of Organizational Performance Course).

As an aspect of personnel management, this refers to the value relationship between workers and the organization, but it has many aspects peculiar to individual domains and processes. DoD utilized a set of five short courses recommended for new supervisors. These included two courses in basic supervision, highlighting performance management. Successful completion earned the supervisory a Supervisory Excellence Award with plaque. Unfortunately, recipients of this award are rare. While performance management is not unique to KM or IT, of necessity it pervades all bureaucratic organizations in modern society. The success of organizations in a changing, competitive environment is highly dependent upon good performance management.

http://www.abm.rda.hq.navy.mil/osd97_3a.html

<http://www.dla.mil/Dimensions/janfeb99/DCMC.htm>.

From Gary Hacker's *HR Metrics News* consolidated from Issues 1-5 (OPM):

Performance Measurement in Not-For-Profit and Public-Sector Organisations by Malcolm Macpherson: <http://www.baldrigeplus.com/Indicators.pdf> 12/01. "Measuring performance is increasingly important in not-for-profit and public sector organizations—from those as large as the U.S. federal government to the smallest volunteer group. Human resources metrics are the most relevant—spanning function, operations and strategy."

The 2002 Performance Measurement Conference: (Presented by The Conference Board) <http://www.conference-board.org/search/dconference.cfm?conferenceid=2002B28> 12/01 (March 6-8, 2002; San Diego, California; \$1850). This conference will help you overcome the key concerns and obstacles to developing performance measures using best practices.

The 2002 Performance Measurement Conference: Beyond Measurement to Management: (Presented by The Conference Board) <http://www.conference-board.org/conferences/conference.cfm?id=255&event=68&view=pricing> 3/02 (April 16-18, 2002; New York, NY;

\$1850). "Learn how the best performance measurement and management systems are developed, implemented and kept fresh."

Performance Measurement For Government Conference: (Presented by Advanced Learning Institute) http://www.aliconferences.com/conferences/perfmeas_may02.htm 4/02 (May 20-22, 2002; Washington, DC; \$1699). "Several agencies are making dramatic strides in developing approaches and systems that work for them. The periodic sharing of these experiences and best practices is an important element of this government evolution."

Fifth Annual Performance Conference: (Presented by the National Academy of Public Administration) <http://www.marcomgroup.com/NAPAPerformance> 4/02, 5/02 (June 3-6, 2002; Washington, DC; \$995). "The Performance Conference is where the top government executives and academic experts from the U.S. and abroad share information and dialogue about best practices for performance-based management."

2003 Performance Measurement Conference: (Presented by The Conference Board) <http://www.conference-board.org/conferences/conference.cfm?id=327> 6/02 (May 1-2, 2003; New York, NY; \$1875) "Integrating measurement and management for maximum performance."

Human Resource Performance Measurement – Measuring the Effectiveness of the HR Function: (Sponsored by the International Association for Human Resource Information Management) <http://www.ihrim.org/events/HRMetrics/atlanta.asp> 5/02 (September 24-25, 2002; Atlanta, GA; \$1195) "The program is designed to meet the needs of HR and HR systems professionals who are responsible for the design, implementation and delivery of HR programs and processes and/or interested in developing skills needed to be effective business partners."

At least four rights must be firmly established for the employed 90 percent of the working population: the right to employment at full capacity; the right of appeal against the judgments of superiors; the right to participate in policy-making; and the right to equitable reward. (Elliott Jaques, *Creativity and Work*, International Universities Press, Inc., Madison, CT, 1990, p. 34.)

Letting the wrong people hang around is unfair to all the right people as they inevitably find themselves compensating for the inadequacies of the wrong people. Worse, it can drive away the best people. (Jim Collins, *Good to Great*, Harper Business, New York, 2001, p. 56.)

Every minute devoted to putting the proper person in the proper slot is worth weeks of time later. (Colman Mockler, CEO of Gillette, quoted by Jim Collins in *Good to Great*, Harper Business, New York, 2001, p. 57.)

The *single* most harmful step you can take in a journey from good to great is to put *the wrong* people in key positions. (Jim Collins, *Good to Great*, Harper Business, New York, 2001, p. 216.)

Period of a Signal

The reciprocal of the frequency of a signal, T (the period) = $1/f$ (where f = the frequency). The length of time needed to complete one full cycle of a signal. The time required to transmit a signal over a distance of one wavelength. One Hertz = 1 cycle per second. A 10-Hz signal would have a period of 0.1 second (one tenth of a second). See frequency, wavelength, and bandwidth.

The length of this conversation is way out of proportion to my interest in it. (Dan Rydel on *Sports Night*, February 2, 1999.)

Personal Digital Assistant (PDA)

Any small, mobile, hand-held device that provides computing and information storage and retrieval capabilities for personal or business use, often for keeping schedule calendars and address book information handy. The term handheld is a synonym. Many people use the name of one of the popular PDA products as a generic term (Palm) (cf. BlackBerry).

Where a calculator on the ENIAC is equipped with 18,000 vacuum tubes and weighs 30 tons, computers in the future may have only 1,000 vacuum tubes and perhaps weigh $1\frac{1}{2}$ tons. (*Popular Mechanics*, March 1949, quoted by Christopher Cerf and Victor Navasky in *The Experts Speak*, Villard, NY, 1984, p. 230.)

Personal Identification Number (PIN)

A PIN is a key number used to identify a user. It is used at automatic teller machines and with credit cards for cash advances, etc. PINs are a weak form of protection against misuse somewhat similar to (but even weaker than) passwords. Essentially, a PIN is a password limited to numbers. It usually precludes letters and special characters that are now used to strengthen passwords. Usually PINs employ fewer characters as well (four digits versus the six to eight mixed characters of typical passwords). An American National Standards Institute standard for PIN management and security is ANSI X9.8-1982. It includes a data encryption standard. See *Protection of PINs in Interchange* (Document 4.5.6) and *Management and Use of PINs* (Catalog No. 207213, both from American Bankers Association, Washington, DC, 1981).

Whether someone is the "right person" has more to do with character traits and innate capabilities than with specific knowledge, background, or skills. (Jim Collins, *Good to Great*, Harper Business, New York, 2001, p. 64.)

Pilot Projects

Small-scale undertakings in a field that replicates reality (a proposed project). They should involve all the key actors and components. Using a pilot project reduces risk, but they are more costly than simulations and can delay real action. Post-pilot scalability can also be an issue. Thus, there is a spectrum of possible activities ranging from jumping in feet first (full-scale project initiation) to pilot projects to simulations and models (IRMC Leadership for the 21st Century Course).

Usual Spectrum of Characteristics for Project Implementations

	Full-scale project	Pilot project	Experiments	Simulation
Time delay to results	High	Medium	Low-medium	Low-medium
Relative cost	High	Medium	Low-medium	Low
Closeness to reality	High	Medium	Low-medium	Low
Risk	High	Low-medium	Low	Low
Implementation delay	None	Low	High	Medium
Dependence on assumptions	Low	Low-medium	Medium	High

Learn to fail fast, fix it, and race on. (Price Pritchett, *The Employee Handbook of New Work Habits for a Radically Changing World*, Pritchett & Associates, Dallas, TX, 1994, p. 10.)

PKEnable

A middleware application that provides public key infrastructure (PKI) -neutral connectivity. Since different commercial certification authorities have incompatible digital certificates (even if they are all X.509 compliant), certain middleware products can link the different brands to allow interoperability through an infrastructure placed between them. PKEnable is sold by SHYM Technology of Boston (<http://ipw.internet.com/protection/security/980804066.html>). It includes a number of components including a SHYM Server, Shyms which link each type of application to a standard, the Shym Integration Layer (SIL), Shym Provider Interface (SPI), etc. Shym presently supports digital certificates from VeriSign and Entrust Technologies and is developing support for GTE CyberTrust and Baltimore. Supported applications include: PeopleSoft, SAP, LotusNotes, and Documentum. Planned applications include: ERPs from Oracle, Baan and Mapics, and J.D. Edwards; supply chain management from i2 Technologies; sales force automation from Siebel, Vantive, and Clarify; and database products from Oracle, Sybase, and Informix. The downside of such a solution is the requirement to install software on client systems, but the ability to map existing applications to PKI is necessary. Lockstar also offers a PKI to legacy integration technology http://www.opennetwork.com/news/press/2001/2001-05-17_lockstar.php, but may no longer be available (<http://www.disobey.com/ghostsites/>) (from PKI: *The Myth, the Magic and the Reality* by Charles Breed, http://networking.earthweb.com/netinfra/article/0,,12087_615851,00.htm utilized in IRMC Managing Networked Security in a Networked Environment Course).

http://boston.internet.com/news/article.php/2001_723311
http://www.entrust.com/news/files/01_18_99_371.htm
http://www.entrust.com/news/files/01_11_99_379.htm
<http://www.advisor.com/Articles.nsf/aid/SMITT97>.

Cannot we let people be themselves and enjoy life in their own way? You are trying to make that man another you. One's enough. (Ralph Waldo Emerson, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 279.)

Plaintext—see Encryption

Text that has not been encrypted or has already been decrypted so that anyone can read it. Also known as cleartext.

Because she had found that brittle-sounding people will talk quite openly if goaded, she added a little barb. (Orson Scott Card, *Xenocide*, Tom Doherty Books, New York, 1991, p. 443.)

Planning, Programming, and Budgeting System (PPBS)

The Department of Defense financial planning and tracking system that uses a multiyear cycle of document generation and review to interface with the Congressional budgeting system. It is a very complicated system involving many different parties and is sometimes depicted as a spiral.

Parkinson's Laws: Work expands infinitely to fill the time allotted to it; work increases to occupy all organization available to do it; expenditures rise with income. (Cyril Northcote Parkinson, *Parkinson's Law and Other Studies in Administration*, Houghton Mifflin Co., 1957.)

Plug-Ins

Additional software that works in conjunction with Web browsers to enhance their capabilities, such as in playing audio or video (e.g., Real Player) or complex graphic effects (e.g., Shockwave or Flash). Many plug-ins are available free for downloading from the Internet (*Glossary of IM/IT & KM Terms*). Plug-ins are a type of helper application. Users cannot ascertain if the plug-in contains malicious code such as a Trojan horse. Thus, trust is a major issue when downloading plug-ins. Since hackers sometimes attack domain name servers to direct surfers to their spoof sites, plug-ins downloaded from the hacker site may be loaded with many types of malware.

They are ill discoverers that think there is no land, when they can see nothing but sea. Francis Bacon (1561–1626), *Advancement of Learning*, Vol. 1, from *The Oxford Dictionary of Quotations*, Oxford University Press, New York, 1980, p. 24, No. 21.)

Policy

According to *Webster's New Collegiate Dictionary*, a policy, among other definitions, is "a high-level overall plan embracing the general goals and acceptable procedures especially of a governmental body." More specifically, policy is one of the 10 federal chief information officer (CIO) competencies, specified by the Federal CIO Council Executive Board, included in the IRMC's curriculum for the CIO certificate (IRMC New World of the CIO Course). Of course, there are information technologies (ITs) policies addressing the other federal CIO competency areas. For example, in the security and assistance competency area, policy would include a certificate practice statement (CPS) for certification authorities run by trusted third parties or commercial concerns. However, there are "three pillars of legislation" said to spell out a new information resource management paradigm: Clinger-Cohen Act/Information Technology Management Reform Act, Paperwork Reduction Act, and the Government Performance and Results Act. Policy also includes widely diverse legislation affecting chief information officers and IT, including Section 508 of the Rehabilitation Act, privacy issues, copyrights, the

Freedom of Information Act, small business, Federal Communications Commission spectrum regulation, etc. In a more generic sense, policies can be approached differently in a value-dependent way. Such approaches include: Neo-classical/welfare (cost-benefit), public choice (collective optimization), social structure (social group consequences), information processing (process modeling), political philosophy (utilitarians and Kantians), and power and influence (self-interest) frameworks (IRMC New World of the CIO Course). DoDD 5111.1 (March 22, 1995) charters the Under Secretary of Defense for Policy (IRMC Assuring the Information Infrastructure Course). Guidelines are optional and recommended practices (say "should"); policies say "must," aim at a wider audience, and are intended to last for many years; standards cover details such as implementation steps and measures for comparison and are intended to last a few years. Common problems with organizational policies are when the policy is a platitude rather than a decision or direction or the policy is not used by the organization, but only exists to show auditors, and does not affect behavior. See http://www.microsoft.com/technet/treeview/default.asp?url=/TechNet/prodtechnol/comm/proddocs/cs2000/cs_gs_planning_tdp.asp (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

<http://www.microsoft.com/technet/treeview/default.asp?url=/technet/security/issues/issues.asp>

http://www.microsoft.com/technet/treeview/default.asp?url=/TechNet/prodtechnol/winxppro/reskit/prdd_sec_gyqt.asp

http://www.microsoft.com/technet/treeview/default.asp?url=/TechNet/prodtechnol/winxppro/proddocs/sag_IPSECchecklist.asp.

A phenomenon noticeable throughout history regardless of place or period is the pursuit by governments of policies contrary to their own interests. Mankind, it seems, makes a poorer performance of government than of almost any other human activity. (Barbara M. Tuchman, *March of Folly*, quoted by Defense Systems Management College, in *Europe* 1992, September 1990, Ft. Belvoir, VA, p. 84.)

Portable Document Format (PDF)

Condensed form of documents created by Adobe and read via their Acrobat application. Creators of such documents pay fees to Adobe, but readers do not (Acrobat is freeware). PDF documents are common on the Internet. They take less memory and download time but may not be as flexible as Microsoft Word documents.

Much of the force as well as grace of arguments, as well as of instructions, depends on their conciseness. (Alexander Pope, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 48.)

Portability

The ability or characteristic that allows a software program or application to run under different hardware or operating systems. For example, a portable software application can be ported to various computers. Many Microsoft products are portable across, for instance, different personals, but not to Apple computers. See Application

Portability Profile (APP): The U.S. Government's Open System Environment Profile (version 3.0, Computer Systems Technology, NIST, February 1996) (IRMC New World of the CIO Course).

When in Turkey, do as the turkeys do. (Honoré de Balzac, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 336.)

Portal—see Knowledge Portal, Portlet

A World Wide Web site serving as the home or starting site for an organization's Internet or intranet users. It will typically include a search engine, links to useful pages, news, and other services. A portal is usually intended as a one-stop shopping entry point or connection beyond one's own local area network. It will normally include hyperlinks to many other sites (especially sub-organizations), tools (such as search and favorites or bookmarks), and is usually tailored to individual user needs or desires. Portals can also be used to allow applications that are not Web-enabled to be accessed by intranet or Internet (using devices such as Citrix servers). For instance, personnel at the Washington Navy Yard detachment of the SPAWAR Systems Center Charleston successfully attached a draft version of the Navy Standard Integrated Personnel System to their portal to demonstrate that it could easily be accessed through the Web.

Every man's condition is a solution in hieroglyphics to those enquiries he would put. He acts it as life, before he apprehends it as truth. (Ralph Waldo Emerson, quoted by Edward F. Edinger in *Ego and Archetype*, Putnam, New York, 1972, p. 107.)

Portfolio Management—see Capital Planning and Investment

An information process that supports IT capital planning and provides information for the continuous identification, selection, management, and evaluation of IT investments (*Glossary of IM/IT & KM Terms*). In evaluating an IT portfolio, both value and risk associated with each investment must be considered. Value consists of: return on investment or ROI (risk-adjusted, discounted, and organization-wide), strategic match (extent to which it contributes to achieving one or more strategic goals), competitive advantage (extent to which it provides a unique advantage with customers or otherwise makes the organization perform better than competitors in the quality, timeliness, and accuracy of product or service deliveries, in communications with customers and other stakeholders, or in the fees charged), management information (extent to which it will produce better information for managing the core business), competitive response (degree to which failure to do the project will cause competitive damage to the organization), and strategic information superiority (IS) architecture (degree to which the IT aspects of the proposal are aligned with the overall IS strategies of the organization). Risk consists of: organizational risk (extent of exposure to risks of concern to the organization and the degree to which such risks are managed, with positive risk management factors including effective management of change, a project or project module of 18 months or less, amount of investment funds required is under 10 percent of overall IT budget), definitional uncertainty (degree the requirements and specifications are known, valid, and reliable), technical uncertainty (degree of technical risk, such as the technology management ability, technical skills needed, software dependencies, hardware dependencies, and

complexity of interfaces or integration), IS infrastructure risk (degree of nonproject investment necessary [e.g., will new or additional support services be required?]) and the extent it will burden the present infrastructure). See "Information Technology Investment Management: An Overview of GAO's Assessment Framework" (GAO/AIMD-00-155, May 2000, exposure draft), which describes the S/C/E (select/control/evaluate) approach to IT investment management (ITIM) which parallels the Software Engineering Institute/Capability Maturity Model (SEI CMM). It includes five stages with 16 critical processes:

**The Government Accounting Office's Application of SEI CMM
Principles to IT Investment Management (ITIM)**

Maturity Stages→ Critical processes ↓	Stage 5: Leveraging IT for strategic outcomes	Stage 4: Improving the investment process	Stage 3: Developing a complete investment portfolio	Stage 2: Building the investment foundation	Stage 1: Creating investment awareness
1	Investment process benchmarking	Post-implementation reviews and feedback	Authority alignment of IT investment boards	IT investment board operation	IT spending without disciplined investment process
2	IT-driven strategic business change	Portfolio performance evaluation and improvement	Portfolio selection criteria definition	IT project oversight	
3		Systems and technology succession management	Investment analysis	IT asset tracking	
4			Portfolio development	Business needs identification for IT projects	
5			Portfolio performance oversight	Proposal selection	

See the ITIM framework document (GAO/AIMD-10.1.23, May 2000 at http://www.gao.gov/special.pubs/10_1_23.pdf or contact Dave McClure, mcclured@gao.gov, 202-512-6240, or Lester Diamond, diamondl@gao.gov, 202-512-7957 (IRMC Advanced Information System Acquisition Course). See GAO's *Executive Guide: Measuring Performance and Demonstrating Results of IT Investments* (GAO/GGD-96-118, June 1996) (IRMC Measuring Results of Organizational Performance Course).

Disadvantaged Business Enterprises: Critical Information Is Needed to Understand Program Impact. GAO-01-586 (90 pp., June 1, 2001), <http://www.gao.gov/new.items/d01586.pdf>.

Talleyrand was heartbroken when an accident left him crippled and unable to pursue a military career. We profited infinitely more from his subsequent accomplishments as a statesman ... Too often society looks at a man and says he has one bad eye, when what's more important is that he has one good one. (Paul Harvey, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall Inc., Englewood Cliffs, NJ, June 1961, p. 165.)

Portlet Server—see Portal

A caching approach that stores certain information locally to save server space and network processing time. Portlet servers send portals dynamically generated content that is frequently changed. They usually provide HTML content blocks that can be added to the portal page. Each portlet provides information or knowledge objects that are pulled from a different source (USA).

[Knowledge is] a rich storehouse for the glory of the Creator and the relief of man's estate. (Sir Francis Bacon [1561-1626], *Advancement of Learning*, 11, from *The Oxford Dictionary of Quotations*, Oxford University Press, New York, 1980, p. 24, No. 17.)

Post-Measure—see Lagging Indicators, Leading Indicators

A measure of performance after the intervention (IRMC Measuring Results of Organizational Performance Course).

History teaches us that man learns nothing from history. (Georg Wilhelm Friederich Hegel, quoted by Hal Lindsay in *The Late Great Planet Earth*, Bantam 1973, p. 17; also quoted by Roger W. Barnett in "The Maritime-Continental Debate Isn't Over," *Proceedings of the U.S. Naval Institute*, June 1987, p. 30.)

Predictive Validity

A form of criterion-referenced validity in which the scores from the instrument are compared statistically with criterion measures that are indications of future performance obtained from the same group of subjects after the required period of time has elapsed (IRMC Measuring Results of Organizational Performance Course).

Explanatory principles should not be multiplied beyond the necessary. ([Occam's Razor, William of Occam, 1300-1349; Duns Scotus, 1265-1308]. C. G. Jung, *Letters*, Vol. 1, Bollingen Series 95, 1906-50, Gerhard Adler and Aniela Jaffe, Eds., Princeton University Press, Princeton NJ, 1953, p. 108.)

Premeasure

A measure of performance before the intervention (IRMC Measuring Results of Organizational Performance Course).

The one great right we all have is the right to be wrong. (Alvina Brower, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall Inc., Englewood Cliffs, NJ, June 1961, p. 173.)

Present Value (PV)—see Capital Planning and Investment, Portfolio Management

The amount of money in today's dollars that would be equivalent to a value of money at some designated point in the future—taking into account the expected inflationary

trend (IRMC Measuring Results of Organizational Performance Course). PV takes into account the time value of money. In cost estimating and the PPBS system in acquisition submits, the time value of money must be taken into account. Financial submits sometimes include parallel charts with one set in present dollars and the other set in future (or then-year) dollars. PV is a major technique used in comparing and selecting investments.

Fourth Law of Thermodynamics: Everything takes longer and costs more.

Presidential Decision Directive-62 (PDD-62) of May 22, 1998—see Information Infrastructure

Protection against Unconventional Threats to the Homeland and Americans Overseas (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

It is more important to do the right thing than to do things right. (Peter Drucker, quoted by Lawrence J. Peter in *The Peter Prescription*, William Morrow & Co., New York, 1972, p. 155.)

The White House: <http://www.whitehouse.gov/>
<http://www.fas.org/irp/offdocs/pdd/index.html>
<http://www.fas.org/irp/offdocs/pdd/pdd-62.htm>.

Presidential Decision Directive-63 (PDD-63)

<http://www.fas.org/irp/offdocs/pdd/index.html>; <http://www.ciao.gov/>

The President of the United States' declaration of intent to establish the national Critical Infrastructure Protection (CIP) Program that: "No later than the year 2000, the United States shall have achieved an initial operating capability and no later than five years from today the United States shall have achieved and shall maintain the ability to protect our nation's critical infrastructures from intentional acts that would significantly diminish the abilities of: the federal government to perform essential national security missions and to ensure the general public health and safety; state and local governments to maintain order and to deliver minimum essential public services; and the private sector to ensure the orderly functioning of the economy and the delivery of essential telecommunications, energy, financial, and transportation services" (*Glossary of IM/IT & KM Terms*). PDD-63 also addresses a sector National Infrastructure Assurance Plan (NIAP), promotes international cooperation, focuses on prevention as well as response to threats, and promotes cooperation with state and local governments and with industry. It directs that chief information officers are responsible for information assurance and that "every department and agency shall appoint a chief infrastructure assurance officer (CIAO) who shall be responsible for the protection of all of the other aspects of that department's critical infrastructure." It also directs vulnerability assessments, establishes the Critical Infrastructure Coordination Group (CICG), the National Infrastructure Assurance Council (NIAC), and assigns agency responsibilities in various sectors. It promotes information exchanges with industry through an Information Sharing and Analysis Center (ISAC) to leverage lessons learned (IRMC New World of the CIO Course). Signed on May 22, 1998. PDD-63: <http://www.fas.org/irp/offdocs/pdd/pdd->

63.htm, Presidential Policy White Paper (May 1998), <http://www.fas.org/irp/offdocs/paper598.htm>; GSA's informational seminar on PDD-63 (October 13, 1998), <http://www.netbriefings.com/event/ciao/Archives/webcast/> (IRMC Assuring the Information Infrastructure Course).

We are victims of nothing except our own negative thinking and haphazard planning. (Alexander E. Braun, "Brave New Era," *Rosicrucian Digest*, March 1975, Vol. LIII, No. 3, p. 41.)

Presidential Decision Directive-67 (PDD-67) (October 21, 1998)—see Continuity of Operations Plan, Disaster Recovery

Enduring Constitutional Government and Continuity of Government Operations (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

<http://www.fas.org/irp/offdocs/pdd/index.html>
<http://www.fas.org/irp/offdocs/pdd/pdd-67.htm>.

It is well to moor your bark with two anchors. (Publilius Syrus, Maxim 119, from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 125.)

President's Commission on Critical Infrastructure Protection (PCCIP)—see Critical Infrastructure Protection

The PCC has 20 commissioners including principals (cabinet secretaries and agencies), appointed advisors from the private sector, and steering: Central Intelligence Agency, Federal Bureau of Investigation, Federal Emergency Management Agency, Department of Commerce, Department of Energy, Department of Justice, Department of Transportation, Department of the Treasury, Department of Defense, AT&T, IBM, FedRes, Georgetown, National Association of Public Utility reg, Pacific Gas and Electric, Thiokol, Association of American Railroad. Holds nationwide hearings. Views infrastructures as national security cyber threat targets (IRMC Assuring the Information Infrastructure Course).

The future usually has in store exactly what's been placed in store for the future. Jacob Braude, *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall Inc., Englewood Cliffs, NJ, June 1961, p. 144.)

Pretest Sensitization

A threat to acceptance of evaluation results which states that an increase in performance may be caused in part by the existence of a pretest, which made the participants aware of what they must be especially aware of in the intervention, and that the performance gain would not have been as large if the pretest were removed (IRMC Measuring Results of Organizational Performance Course).

The foolish and the dead never change their opinion. (James Russell Lowell, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 169.)

Pretty Good Privacy (PGP)

PGP is a freeware encryption application. Formerly, it employed symmetrical keys, but the newer version (downloadable from the Web) uses asymmetrical keys. It is, therefore, similar to public key infrastructure, though it is actually a hybrid cryptosystem. The strength of the PGP algorithm is selectable by the user—with high strengths now available. Users can trade public keys and then interchange secure messages via PGP. PGP works with many current e-mail programs or can be used via the Microsoft clipboard function. PGP will then encrypt/decrypt the contents of the clipboard if desired. PGP does require installation via executable code. Local area network systems that disallow executables preclude setup and use of PGP. PGP works by first compressing the plaintext (saving modem transmission time and disk space and strengthening security). It then creates a session key (a one-time only secret key) that is randomly generated from the user's mouse movements and keystrokes. A conventional encryption algorithm is used with the session key to encrypt the plaintext—resulting in ciphertext. The session key is then encrypted with the recipient's public key and is transmitted along with the ciphertext to the recipient. The recipient's PGP/computer uses his or her private key to decrypt the temporary session key that is then used to conventionally decrypt the ciphertext. The combination of public key encryption and conventional encryption results in faster speeds (adapted from IRMC Managing Networked Security in a Networked Environment Course). PGP stores its keys on two key rings (public and private) stored in an encrypted form on the user's computer. PGP software can be obtained for personal use at no cost at: <http://web.mit.edu/network/pgp.html>.

ASSIST uses Pretty Good Privacy (PGP) 2.6.2 as the digital signature mechanism for bulletins. PGP 2.6.2 incorporates the RSAREF(tm) Cryptographic Toolkit under license from RSA Data Security, Inc. A copy of that license is available via anonymous file transfer protocol from net-dist.mit.edu (IP 18.72.0.3) in the file /pub/PGP/rsalicen.txt. In accordance with the terms of that license, PGP 2.6.2 may be used for noncommercial purposes only. Instructions for downloading the PGP 2.6.2 software can also be obtained from net-dist.mit.edu in the pub/PGP/README file. PGP 2.6.2 and RSAREF may be subject to the export control laws of the U.S. Army as implemented by the U.S. Department of State Office of Defense Trade Controls. The PGP signature information will be attached to the end of ASSIST bulletins.

Self-reliant like the cat—that takes its prey to privacy. (Marianne Moore, 1887–1972, *Silence*, from *The Oxford Dictionary of Quotations*, Oxford University Press, New York, 1980, p. 355, No. 22.)

Privacy—see Privacy Act of 1974

Privacy is a social, political, human issue, especially in democracies such as the United States. The advent of the electronic age has opened up a Pandora's Box of privacy issues including cookies, customer relationship management, secure databases, secure data transmissions, sensitive but unclassified materials, and public key infrastructure. Such organizations as eTrust have been born to help to address some of these issues. Persons

desiring to use the Internet without being identified, for instance, can use such tools as <http://www.anonymizer.com> to hide their identities. Privacy is closely related to personal property that has its own IT issues as exemplified in the legal action against Napster (IRMC Managing Networked Security in a Networked Environment Course). The Electronic Communications Privacy Act of 1986 (ECPA) shifts the focus from allowing interception of communications to protecting communications. Unauthorized interception was made a crime and an invasion of privacy. On the other hand, the Supreme Court (*Whalen v. Roe*), allowed a New York state statute allowing retention of a database about individuals with drug prescriptions because the reason for having it was sufficiently important and it was adequately protected despite citizen rights to privacy of personal information.

The Privacy Act of 1974 controls federal record keeping and disclosure including safeguards to protect privacy. The Computer Matching and Privacy Protection Act of 1988 addresses procedures to control government record matching across databases containing Privacy Act records. The Right to Financial Privacy Act of 1978 controls government's rights to records held by financial institutions. The Computer Security Act of 1987 directs improving security and privacy measures on government databases containing sensitive information. See the Government Accounting Office's *Computers and Privacy—How the Government Obtains, Verifies, Uses, and Protects Personal Data* (Washington, DC, GPO, 1990) (IRMC New World of the CIO Course). Nonetheless, the European Union has indicated that U.S. privacy rules are still not good enough. An open (Internet) profiling standard has been proposed to protect personal privacy on the Internet. It is projected that its adoption could greatly increase electronic commerce. Many additional laws have been proposed in Congress.

Necessity is the plea of every infringement of human freedom. It is the argument of tyrants; it is the creed of slaves. (William Pitt, *Speech on the Indian Bill*, November 18, 1783, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall Inc., Englewood Cliffs, NJ, June, 1961, p. 249.)

Privacy Act of 1974, U.S.C. 552, P. L. 93-579 (December 31, 1974)—see Electronic Communications Privacy Act and Foreign Intelligence Surveillance Act

Purposed to restrict disclosure of personally identifiable records maintained by agencies; grant individuals increased right of access to agency records maintained about themselves; grant individuals the right to seek amendment of inaccurate, untimely, or incomplete records; and establish a "code of fair information practices" for agency guidance. Rights were limited to natural persons including citizens and permanent residents. Records included: "any item, collection or grouping of information ... that contains name, identifying number, symbol or identifying particular (e.g., fingerprint) used for retrieval." Department of Defense responsibilities include implementation of physical security practices, information management practices, and computer and network controls necessary to ensure individual privacy (IRMC Assuring the Information Infrastructure Course).

http://www.usdoj.gov/04foia/04_7_1.html.

The right to be let alone is the most comprehensive of rights and the right most valued in civilization. (Louis D. Brandeis, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 92.)

Process Improvement

One of the 10 federal CIO competencies, specified by the Federal CIO Council Executive Board, included in the IRMC's curriculum for the CIO certificate. Processes are the end-to-end activities that create value to a customer. Michael Hammer and James Champy's book *Reengineering the Corporation* initiated a trend towards business process reengineering (BPR) as part of the revolution in business affairs (RBA) cited by political leaders. It followed upon the government's attempt to implement W. Edwards Deming's total quality management (TQM) dubbed total quality leadership (TQL) in the Department of Defense. The former approach is to completely replace an extant system; the latter approach is to continually improve the extant system; one is revolutionary, the other is evolutionary. Additionally, TQL focuses on outputs, improving internal operations of an organization; BPR focuses more on outcomes including relations with external organizations in an open environment. It tends to change vital working relationships with other organizations. Customer and supplier relationship management (CRM and SRM) are two aspects of such changing relationships: the first with customers, the second with suppliers. Such approaches are opposed to politically correct (PC) or rice bowl engineering (RBE) approaches (IRMC New World of the CIO Course).

The road to wisdom? —well, it's plain and simple to express:

Err and err
and err again
but less
and less
and less.

(Piet Hein, "The Road to Wisdom," quoted by George Steiner in *Top Management Planning*, MacMillan & Co., New York, 1969.)

Program—see Brain Drain, Program Profiles

<http://www.defensedaily.com/progprof.htm>

1) In software, an organized list of instructions that, when executed, causes the computer to behave in a predetermined manner. Without programs computers are useless. A program is like a recipe. It contains a list of ingredients (variables and constants—data) and a list of directions (statements) that tell the computer what to do with the data (*Glossary of IM/IT & KM Terms*). The data can be, for example, alphanumerical (numbers and text) or graphical images. Originally, programs were written in binary (ones and zeros), then octal or hexadecimal, then assembly languages (instructions were text which mapped directly into machine code or language), then higher order languages (e.g., ALGOL, COBOL, or FORTRAN). Special software converts the language used into machine language (i.e., assemblers or compilers). More recently, computers have become capable of multiprogramming/multiprocessing, with a multiplicity of programs running on the same machine simultaneously (e.g., Microsoft Windows). Programs are often referred to as applications in IT. Popular languages now

include: C++ and Java. Many legacy programs, however, were written in older languages, and maintaining them has become problematic (see brain drain). Common programs include: Microsoft Word and Excel, and Netscape.

2) In acquisition management, a significant project, normally with a planned budget and schedule (through the planning, programming, and budgeting system and created via the program objectives memorandum) and performance requirements (via system specifications, operational requirements document, etc.). Managing and implementing them is entitled program management.

Knowledge must come through action; you can have no test which is not fanciful, save by trial. (Sophocles, *Trachiniae*, l.592, *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 82b.)

Program Management (PM)

PM is the process of orchestrating acquisition programs (especially in the Department of Defense [DoD]). Acquisition also includes procurement and other activities (e.g., use of government credit cards). Programs, while often utilizing contractor off-the-shelf (COTS) hardware and software, generally are used when the system desired has not yet been built. Though a program can address the full life cycle of the requirement solution. Programs are managed via program management offices (PMOs) located in the Navy in systems commands (e.g., NAVAIR, NAVSEA, and SPAWAR) or program executive offices (PEOs) such as PEO-IT. The latter were created to manage the largest programs (called acquisition category [ACAT] Is). Program management is a major Defense Acquisition Workforce Improvement Act (DAWIA) specialty and level 3 was previously achieved through the 14-week Advanced Program Management Course (PMT302) at the Defense Acquisition University's (DAU) Defense Systems Management College-School of Program Managers; the final APMC class graduated in August 2002. This course is replaced by the Program Management Office Course (PMT352) with 60 days online, 6 weeks resident. Individuals designated as program managers or deputy PMs for major programs must also take DAU's Program Manager's Course (PMT401) with a 10-weeks residency. Acquisition is also one of the National Defense University's 10 federal CIO competencies; thus, PM is also applicable in the IT arena. One of the great mistakes made in the recent past was to anticipate that COTS could be used to procure the software and hardware portions of a system without using PM techniques and methods. Such "procurements" (e.g., the Standard Procurement System and many others) were originally unsuccessful because they ignored the systems engineering and management needed—which are included under program management. The most challenging aspects of PM often lie in interfacing, interoperability, and integration issues which are even more prominent today with the increasing desire for connectivity, real or virtual. For example, Task Force Web ([https://ucso2.hq.navy.mil/n09w/webbas01.nsf/\(vwwebpage\)/webbase.htm?OpenDocument](https://ucso2.hq.navy.mil/n09w/webbas01.nsf/(vwwebpage)/webbase.htm?OpenDocument)) is working to webify the Department of the Navy, and the Navy/Marine Corps Intranet will provide upgraded connectivity and IT resources. Such initiatives support the intent of the DoD global information grid. The Assistant Secretary of the Navy for Acquisition Reform and Defense Acquisition University have initiated a

PM community of practice (PM COP) with a Web site available via Internet:
<http://www.pmcop.dau.mil>.

Program Manager Boulevard: <http://www.pmbld.com>

Winsight tool: <http://www.sed.monmouth.army.mil/se>

Mesa/Vista environment for project management and control:
<http://ipw.internet.com/e-business/intranet/916161532.html>.

How dreadful knowledge of the truth can be when there's no help in truth! (Sophocles [c.495-405 B.C.] *Oedipus Rex*, 1.316, from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 81b.)

Protocol—see Hypertext Transfer Protocol

Communication rules, required for handshaking and transfer of data. When computers communicate, their messages must be put into a “packet” or envelope that each can recognize. These envelopes (similar to postal envelopes) must carry a return address and a destination address. The protocol determines how and where these addresses appear within the packet. If the sending and receiving protocols are not the same, the receiving machine will get the wrong address information from the packet and fail to recognize its own messages. Protocols include: transmission control protocol/Internet protocol (TCP/IP), SNA -- System Network Architecture (IBM mainframe protocol), IPX -- Internet Packet Exchange (Novell NetWare protocol), DLR (disk operating system local area network requestor), and Local Talk (Apple/Macintosh protocol) (based on *Glossary of IM/IT & KM Terms*).

One must allow other people to be right, he used to say when he was insulted, it consoles them for not being anything else. (Andre Gide, *The Immoralist*, Richard Howard trans., Vintage Books, 1956.)

Proxy Server

A firewall or server connected to external sites in lieu of the real (internal organization) server. The proxy protects the internal server from attack. It also provides increase flexibility in firewall services.

As Robert Green Ingalls said, “In nature there are neither rewards nor punishments—there are consequences.” (Robin Robertson, *Your Shadow*, ARE Press, Virginia Beach, VA, 1997, p. xi.)

Public Key Cryptosystems

There are several algorithms or methods for constructing key pairs for public key infrastructure and other asymmetric cryptography systems. They are mostly named for their inventors and include: Elgamal (Taher Elgamal), RSA (Ron Rivest, Adi Shamir, and Leonard Adleman), Diffie-Hellman, and DSA (the digital signature algorithm, invented by David Kravitz).

No army can withstand the strength of an idea whose time has come. (Victor Hugo, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 119.)

Public Key Infrastructure (PKI)—see Certification Authority (CA) and Encryption

PKI is a form of asymmetric encryption (i.e., the encoding key and decoding key are different). Two parties wishing to communicate in a protected manner each must have a private and a public key of their own. They exchange their public (but not their private) keys. This is normally accomplished through digital certificates that include the public key as well as authenticating information about the party involved and a signature from an authority attesting to the authenticity of the certificate (sometimes several). Thus, the parties actually exchange digital certificates—often through a trusted third party (TTP) external to both the communicators.

Key management infrastructure (KMI) is the process for handling digital certificates. Each party encodes their transmission with the other party's public key. Only one's private key can decode something encoded with one's public key (and vice versa). At this point only the recipient (assuming it's actually that entity's real public key) can now decode the message. However, to enhance security, the sender adds his or her own digital signature to the message. The recipient then uses the sender's public key to decode the signature, ensuring the identification of the sender. Lastly, a hash function is used to produce a fixed-length message digest.

Any change in the message will produce a different hash so that the participants can verify if messages have arrived unchanged. Since the hash is signed with the sender's private key, it precludes the same digital signature being used on other messages by unauthorized parties. Since PKI's public keys are not secret, secure distribution is not required. Thus, strong encryption (formerly limited to users who could afford it) is now cost-effective for mass usage. Care must be taken (use of proper KMI), however, when using digital certificates (public keys) to preclude man-in-the-middle attacks. Breed lists several commercial concerns that support PKI in PKI: The Myth, the Magic and the Reality http://networking.earthweb.com/netinfra/article/0,,12087_615851,00.htm. A PKI solution should consist of: a security policy, CA, registration authority (RA), certificate distribution system, and PKI-enabled applications (from IRMC Managing Networked Security in a Networked Environment Course). Department of Defense Chief Information Officer (DoD CIO) Memorandum, DoD PKI, was issued on August 12, 2000, <https://iase.disa.mil/PKI/>. The DoD PKI Program Management Office issued PKI Roadmap for the DoD on December 18, 2000, <https://iase.disa.mil/documentlib.html#PKIDOCS>. The Government Accounting Office (GAO) issued Advances and Remaining Challenges to Adoption of PKI Technology in February 2001, <http://www.gao.gov/new.items/d01277.pdf>.

There are two types of PKI, open and closed. In open PKI, one certificate has many functions (one key pair for many purposes). In closed PKI, many certificates are used for a few functions—different certificates for different purposes (IRMC Advanced Information System Acquisition Course). See http://www.esecurityplanet.com/resources/article/0,,10760_964411,00.html (IRMC Critical Information Systems Technologies Course). It has

been stated, "the use of public key encryption techniques and message digests can largely eliminate fraud on the Internet."¹⁶ In addition:

Sensitive transactions will likely need the full range of security assurances offered by PKI transactions involving sensitive information ... are likely to require greater security assurances than can be had through simple security measures, such as requiring passwords to gain access ... [but] the full range of security assurances that may be needed for sensitive transactions is not available through [secure sockets layer, SSL], unless the user's software is specially configured or modified. As it is commonly used, SSL does not provide full authentication of both sender and recipient, nor does it provide for nonrepudiation of a transaction. Thus it is not an answer to all of the government's needs in securing sensitive electronic transactions.¹⁷

On the other hand, "In theory, public key cryptography deployed in a PKI provides a very high level of security and there is little doubt throughout the industry that a fully deployed PKI overcomes most of the current security and management issues that organizations are concerned about."¹⁸ Therefore, PKI has emerged as the dominant security framework or infrastructure supporting the main concerns required for business-to-business e-commerce. Businesses must rely on this flexible and interoperable infrastructure to conduct trusted online business.

PKI is designed to protect information assets through: authentication (validates the identity of parties in communications and transactions), confidentiality (ensures that information cannot be viewed), data integrity and tamper detection (provides message authentication), nonrepudiation (ensures that transactions, once committed, are legally valid and irrevocable), availability (ensures that transactions or communications can be executed reliably upon demand).¹⁹ Thus, PKI meets the requirements of the Information Resources Management College's CIANA (confidentiality, integrity, availability, nonrepudiation, and authentication) security criteria, providing the necessary levels of security.²⁰ GAO²¹ describes a number of challenges to successful government PKI implementation. These include: a lack of compatibility due to options in standardization methods and syntax leading to a potential lack of interoperability, unknown scalability, high costs, lack of unified federal policies, new user and administrator training, archiving, limited operational experience, difficult legacy system implementations, certificate and key management.

Others have focused on credential storage, smart cards, interpretation of standards, distribution and certificate revocation,²² key recovery and escrow,²³ privacy and anonymity issues and "misuse of digital certificates by hackers, unscrupulous employees, government agencies, financial institutions, insurance companies, and so on."²⁴ Indeed, Brands calls digital certificates "the most pervasive electronic surveillance tool ever built."²⁵ Though these are legitimate concerns, many are applicable to new developments in general, some are based upon certain assumptions or mindsets, and others are susceptible to former, identifiable solutions. Only a few are specific to PKI. Finally, some vulnerabilities or limitations may only apply to some users and not to others, for instance, "the primary driver for DoD's development of PKI has been to improve security of transactions rather than promote electronic government."²⁶ Using a decision theory approach, one compares an alternative against other alternatives (including the costs of

nonimplementation), not against perfection (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course author's final paper, *PKI Vulnerabilities*) <http://www.counterpane.com/pki-risks.html>.

It takes 20 years to become an overnight success. (Eddie Cantor, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 233.)

Pump and Dump

A form of stock fraud in which perpetrators release misinformation about a stock to entice traders to buy or sell the stock, so that they can sell quickly and take profits before it is realized that the information was false. Thus, they pump up a stock's price, then dump it.

Is this a "we ate the lollipop, but you can have the wrapper" trick? (Fred H. Bloch, at IBM Design Review of AN/UYS-1, April 27, 1977.)

Push-Pull

These are antithetical means of distributing knowledge, information, and data. In a push mode, the source or distributor pushes the new or updated message to its customers or users automatically. A listserve is an example of a push methodology. In a pull mode, the distributor makes the message available to users who download it (pull it) at their discretion. User needs will determine which is better for that user.

Experience indicates that knowledge cannot be imparted. It can only be acquired. (Norman G. Shidle, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall Inc., Englewood Cliffs, NJ, June, 1961, p. 205.)

Q

Qualitative Measurement—see Quantitative Measurement

Providing narrative descriptions that define the quality of the factor being measured. (The descriptions which are rich in details and in the form of verbatim statements, anecdotal descriptions, case studies ... are typically subjectively derived, being open to interpretation) (IRMC Measuring Results of Organizational Performance Course.)

I would rather be ashes than dust. I would rather that my spark should burn out in a brilliant blaze than it should be stifled in dry rot. I would rather be a superb meteor every atom of me in magnificent glow than a sleepy and permanent planet. The proper function of man is to live, not to exist I shall not waste my days in trying to prolong them. I shall use my time. (Jack London, quoted in "Washington Reports," *Physics Today*, 1987, Vol. 40, No. 3, p. 48.)

Quality—see Software Quality

The correctness, timeliness, accuracy, completeness, relevance, and acceptability of knowledge, information, and data (DoD 8320.1-M, *Data Administration Procedures*) (IRMC Data Management Strategies and Technologies Course). There are two types of quality metrics: product and process. Product metrics define the ability of the delivered product to meet the functional and technical requirements of the project. Process quality metrics (e.g., defect removal rate) measure the success of processes (defect removal) during development. See Andrew Sage's "Strategic Quality Assurance and Management" chapter in *Systems Management for Information Technology and Software Engineering* (John Wiley & Sons, New York, 1997), and *12 Rules to Make Your ISO 9000 Documentation Simple and Easy to Use* (C. W. Russo, American Society for Quality Control, 1997) (IRMC Advanced Information System Acquisition Course). See *DoD's Quality and Productivity Self-Assessment Guide: Ideas and Sources and Survey*, (version 3.0, February 1995), U.S. Department of Commerce, National Institute of Standards and Technology's *Malcolm Baldrige National Quality Award Criteria for Performance Excellence* (1998), <http://www.quality.nist.gov/>, <http://www.asq.org/>, and President's Quality Award Program at <http://www.opm.gov/quality/> (IRMC Measuring Results of Organizational Performance Course).

From Gary Hacker's *HR Metrics News* consolidated from Issues 1-5 (OPM):

President's Quality Award Program: <http://www.opm.gov/pqa> 6/02. "We have re-oriented the President's Quality Award Program. It is now focused on recognizing accomplishments that further the Administration's objectives as noted in the President's Management Agenda."

International Quality & Productivity Center's Conference Topics: <http://www.iqpc.com/cgi-bin/templates/0/index.html> 4/02. IQPC's conference information and links.

Men are disturbed not by the things that happen but by their opinion of the things that happen. (Epictetus)

Quantitative Measurement—see Qualitative Measurement

The assignment of numerical values (or words that imply a numerical value) to represent the amount or degree that a factor being measured exists (the assigned scores which are in the form of sums, averages, percentages, ratios,... are expected to be objectively derived, not subject to interpretation). (IRMC Measuring Results of Organizational Performance Course.)

Nature, as we know, is not satisfied with theories. (C. G. Jung, *Freud and Psychoanalysis*, CW4, Pantheon Books, New York, 1961, p. 288.)

Questionnaire or Survey—see Behaviorally Anchored, Comparative, Likert, Ordinal, Semantic Differential and Thurstone Rating Scales

A type of measurement instrument that yields a single score by arithmetically combining responses to a number of items (statements or questions with several possible responses represented on some form of scale), where each item attempts to measure one aspect of the factor being measured.

Tips on surveying: <http://www.itpolicy.gsa.gov/mkm/pathways/survey/measure.htm>.

Survey design: <http://www.surveysystem.com/sdesign.htm> (IRMC Measuring Results of Organizational Performance Course). You cannot assume respondents will tell the truth, especially if you do not explain to them why they should not. Privacy is often influential in respondent responses. For instance, sites requiring registration to see additional information have had several respondents named "Mickey Mouse" sign up! Customers may assume information they provide can be sold unless otherwise indicated. See *Self-Assessment Guide for IT Systems* (National Institute for Standards and Technology Special Publication 800-XX, March 9, 2001) for an example of a comprehensive questionnaire, <http://csrc.nist.gov/301-975-3293> marianne.swanson@nist.gov (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

There are two ways of spreading light: to be the candle or the mirror that reflects it. (Edith Wharton, 1862–1937, *Vesalius in Zante*.)

R

Random Access Memory (RAM)

Memory that provides equally rapid access to every item of information stored, regardless of location. This contrasts with sequential access devices, such as tape, where items of information can be accessed only in the sequence in which they were originally stored. Unlike ROM (read-only memory), RAM can be compared to a blackboard or slate, on which you can write, erase what you wrote, and write something else again and again. It holds programs and data that may be instantly needed by the processor from moment to moment, and it acts as a scratch pad for storing intermediate results in calculations (*Glossary of IM/IT & KM Terms*). RAM usually refers to the volatile (it must be constantly powered) component of a computer (formerly core memory unit) rather than the read-write disk now included. RAM is used for temporary (operating) storage. The computer "runs" off the RAM so that all the programs running (e.g., under Windows) are normally loaded into the RAM memory from another, nonvolatile source (the built-in disk, a removable diskette or zip drive, or the local area network server). If insufficient RAM is available, a computer can "overlay" programs and data, bringing them in and out of RAM on an as-needed basis—but this is a time-consuming process. Thus, adding RAM can decrease response times or latencies. The advent of larger applications (newer versions of such programs as Microsoft Word tend to greatly increase in size over time as more features are added) has necessitated increased RAM and disk sizes for computers. Older computers quickly become obsolete due to lack of RAM, disk, and speed to run the larger, slower programs. The Navy/Marine Corps Intranet, for instance, addresses this problem by providing a standard set of computing capabilities that is regularly upgraded to industry standards.

Next to the hunger to experience a thing, men have perhaps no stronger hunger than to forget. (Hermann Hesse, *The Journey to the East*, Hilda Rosner trans., Noonday Press, New York, 1969, p. 57.)

Random Sampling

Selection of cases takes place using a repetitious random process that assures that each member of the accessible population has an equal chance of being selected (IRMC Measuring Results of Organizational Performance Course). In practice, software-driven random number generators are used to approximate randomness. Some care must be taken when reusing the same random number generator for different cases to ensure that repetition of numbers does not occur. Legitimate sampling requires that sufficient cases are utilized. If a population consists of subgroups that are internally consistent but differ widely from other such groups, care must be taken to ensure true randomness and, sometimes, other techniques than random sampling may be more appropriate.

The right people don't need to be tightly managed or fired up; they will be self-motivated by the inner desire to produce the best results and to be part of something great ... great vision without great people is irrelevant. (Jim Collins, *Good to Great*, Harper Business, New York, 2001, p. 42.)

Rater—see Threats and Ordinal Rating Scale

A person who “rates” or evaluates submissions. Situations include: evaluating competitive contractor proposals for a contract, rating candidates for jobs, evaluating present employee work performance, selecting from among different alternative problem solutions, etc. Decision theory can assist with the process, but humans are needed to devise the raw scores drawn directly from the input materials—some of which are often subjective. Due to this subjectivity, raters (especially if untrained) are subject to numerous threats to objectivity and errors in judgment. These may be psychological and unconscious in nature. They include: central tendency, contrast, frame of reference, halo effect, history, and time-dependency.

People tend to see what they want to see. Out of a mass of detailed information they tend to pick out and focus on those facts that confirm their prior perceptions and to disregard or misinterpret those that call their perceptions into question. (Robert Fisher and William Ury, *Getting to Yes*, Bruce Patton, Ed., Penguin Books, New York, 1981, p. 23.)

Rational Unified Process (RUP)

The Rational Unified Process®, or RUP® best practices method, is a Web-enabled set of software engineering processes that provide guidance to streamline team development activities. RUP facilitates the choice of project-appropriate sets of process components. Teams using common processes experience more predictable results by improving communication and creating common understanding of tasks, responsibilities, and artifacts. Vendors and domain experts RUP process components on a unified Web site. The RUP knowledge base helps unify a team by identifying and assigning responsibilities, artifacts, and tasks so each member of the team understands his or her contribution to the project. So unifying a team streamlines communication, promoting efficient resource allocation, proper deliverables, and met deadlines. RUP includes industry best practices, incorporating lessons learned from hundreds of industry leaders and thousands of projects. It decreases re-inventing solutions to known software problems. The RUP platform enables you to leverage new tools and technologies in your unique environment through customized plug-in content, tool mentors, and extended help. Technology plug-ins allow you to update your development process and customize the process as technology, tools, and platforms evolve. On one centralized Web exchange, Rational Software, platform vendors, tool vendors and domains experts provide such process components. To fully leverage new technologies and increase tool-use efficiency. RUP also provides tool-specific online mentors to explain how to implement these tools in the user's environment <http://www.rational.com/products/rup>.

You can't think and hit at the same time. (Yogi Berra, *The Yogi Book*, Workman Publications, New York, 1998, p. 13.)

Read-Only Memory (ROM)

“Built-in” computer memory containing data that normally can only be read, not written to. ROM contains the programming that allows your computer to be “booted up” or regenerated each time you turn it on. Unlike a computer's RAM, the data in ROM is

not lost when the computer power is turned off (based on *Glossary of IM/IT & KM Terms*). PROM is programmable ROM; a WORM is a memory in which one Writes Once and Reads Many times. Some PROMs can be re-written: EPROMs are erasable PROMs. Re-writing PROMs usually require special equipment exterior to the computer. However, some special computers have been designed to re-write EPROMs while still installed in the computer. EEPROMs are electronically erasable EPROMs. Formerly, ultraviolet light was required to erase EPROMs. The number of re-writes is, however, somewhat limited as opposed to RAM, which can be re-written a great many times.

The fool sees naught but folly; and the madman only madness. Yesterday I asked a foolish man to count the fools among us. He laughed and said, "This is too hard a thing to do, and it will take too long. Were it not better to count only the wise?" (Kahlil Gibran, *Words of the Master: a Second Treasury of Kahlil Gibran*, p. 55.)

Recognition-Primed Decision (RPD)

Method whereby an experienced decision maker uses experience to immediately identify key aspects of a pending decision to create plausible possibilities and exclude implausible ones. The decision maker then extrapolates the effects of making the particular choice in order to accept or reject it. An RPD does not result in an optimal decision but a quick "satisficing" decision without deliberate option comparisons. RPDs include a good dose of intuition to be effective. See Gary Klein's "Strategies of Decision Making" (*Military Review*, May 1989, pp. 56-64): "Decision aids can interfere with and frustrate the performance of skilled operators. It is no wonder that field officers reject decision aids requiring them to use lengthy analytical processes when the time available is not adequate." RPD takes into account the decision-making process as part of the decision criteria (cost) (IRMC Leadership for the 21st Century Course).

Slavish obedience to rules and regulations is one way to avoid discomforting thoughts about our actions. (Jerry B. Harvey, *The Abilene Paradox and Other Meditations on Management*, Lexington Books, Lexington, MA, 1988, p. 93.)

Records Management

Management (planning, controlling, directing, organizing) of knowledge, information, and data records, and their creation, maintenance, and use. Such records can include both hard (books, papers, maps, photographs, machine-readable documents) and soft (electronic and software) materials, regardless of physical form or characteristics. With the rapid rise of IT, records have evolved into multimedia documents. Records are generally the components of files.

The real purpose of books is to trap the mind into doing its own thinking. (C. Morley, quoted by Lawrence J. Peter in *The Peter Prescription*, William Morrow & Co., New York, 1972, p. 13.)

Red Team

Independent and focused threat-based effort by an interdisciplinary simulated adversary to expose and exploit vulnerabilities as a means to improve the security posture of information systems (*Glossary of IM/IT & KM Terms*). A red-team effort is the

highest level of information security testing (audit and penetration testing are the other levels) (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course). Generically, red teams are used as independent evaluators of any process or product. Bidders often use red teams to evaluate their proposals prior to submission to the government in a competitive solicitation.

In so-called creative work the person generally sets his own object and task, whereas in other types of work his object or task is set for him ... discretion and judgment constitute the sole factor in the sense of effort in work. (Elliott Jaques, *Creativity and Work*, International Universities Press Inc., Madison, CT, 1990, p. 155.)

Redundant Array of Independent Disks (RAID)

A set of two or more hard disks with a disk controller and RAID functionality. It provides redundancy or backup by mirroring the target system. It improves performance by disk striping—interleaving bytes or groups of bytes across multiple disk drives so that more than one disk is writing and reading simultaneously. RAID has several levels of implementation. In RAID 1, data is 100 percent duplicated on two drives. In RAID 3&5, the parity results on two drives are calculated and stored on a third drive; a failed drive can be hot swapped and lost data rebuilt by the RAID controller (IRMC Managing Networked Security in a Networked Environment Course). RAID is reliable, handles frequent data changes, is scalable, and works well for client-server systems. There are various types of RAID: 0, 1, 2, 3, 4, 5, 6, 7, 10, and 53. See <http://www.acnc.com/raid.html>.

Measuring Storage^a

Term	Equivalence	Power of 10	Approximation
Kilobyte	1,024 bytes	3	½ page
Megabyte	1 million bytes	6	Short novel
Gigabyte	1 billion bytes	9	Encyclopedia
Terabyte	1 trillion bytes	12	1,000 encyclopedias
Petabyte	1,000 terabytes	15	1 million encyclopedias

a. IRMC Data Management Strategies and Technologies Course.

Knowledge is essential for work. But it is essential in being one of the tools of work—like a saw, or a microscope; it is not the work itself. (Elliott Jaques, *Creativity and Work*, International Universities Press, Inc., Madison, CT, 1990, p. 156.)

Reengineering—see Business Process Reengineering (BPR)

Reengineering involves scrapping a current process and replacing it with a new one—not restricted by the assumptions limiting the initial process. See Michael Hammer's "Reengineering Work: Don't Automate, Obliterate" (*Harvard Business Review*, July-August 1990, pp. 104–112 (IRMC Advanced Software Acquisition Management Course).

Nothing can change from one thing to another (without first losing its original identity). Thus, for example, before an egg can grow into a chicken, it must first cease totally to be an egg. Each thing must lose its original identity before it can be something else. Therefore, before a thing is transformed into something else, it must come to the level of Nothingness. This is how a miracle comes about, changing the laws of nature. First the thing must be

elevated to the Emanation of Nothingness. Influence then comes from that Emanation to produce the miracle. (The Great Maggid of Mezerich, quoted by Aryeh Kaplan, *Meditation and Kabbalah*, Samuel Weiser, York Beach, ME, 1982, pp. 301–302.)

Registration Authority (RA)

The RA is the interface between the user and the certification authority (CA). It authenticates the user and submits the user's certificate request to the CA. The quality of the RA affects that of the level of trust.

It takes a wise man to recognize a wise man. (Xenophanes IX [570-475 B.C.], from *Diogenes Laertius*, from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 70b.)

Regression Analysis—see Threats to Acceptance

A statistical analysis and model of evaluation that can determine the effect that an intervention has on organizational performance after statistically controlling for the effects of other factors that can also affect performance (IRMC Measuring Results of Organizational Performance Course).

The scientific axiom known as Occam's Razor—"explanatory principles should not be multiplied beyond the necessary." (C. G. Jung, *Psychological Types*, CW6, Princeton University Press, Princeton, NJ, 1971, p. 494 ff.)

Relevance Ranking

A technique used to differentiate among and between items located by search engines (e.g., Web search engines such as Google or Alta Vista). Generally results are displayed on the screen from the most relevant to the least relevant [based on] the search criteria and algorithm used. In a knowledge base, relevancy is usually based on a set of parameters defined by the knowledge base administrator (*Knowledge Management: The Catalyst for Electronic Government*, Raymond Barquin and Alex Bennet, Eds., Management Concepts, Vienna, VA, 2001, [USA]). While relevance ranking can, in theory, assist with searches that result in an overabundance of information, present relevance ranking methods may not be adequate or closely match the needs or opinions of the user.

Sir Ernest Rutherford, President of the Royal Academy, and recipient of the Nobel Prize in Physics, related the following story: Some time ago I received a call from a colleague. He was about to give a student a zero for his answer to a physics question, while the student claimed a perfect score. The instructor and the student agreed to an impartial arbiter, and I was selected. I read the examination question: "Show how it is possible to determine the height of a tall building with the aid of a barometer." The student had answered: "Take the barometer to the top of the building, attach a long rope to it, lower it to the street, and then bring it up, measuring the length of the rope. The length of the rope is the height of the building." The student really had a strong case for full credit since he had really answered the question completely and correctly! On the other hand, if full credit were given, it could well contribute to a high grade in his physics course and certify competence in physics, but the answer did not confirm this. I suggested that the student have another try. I gave the student six minutes to answer the question with the warning that the answer should show some knowledge of physics. At the end of five minutes, he hadn't written anything. I asked if he wished to give up, but he said he had many answers to this problem; he was just

thinking of the best one. I excused myself for interrupting him and asked him to please go on. In the next minute, he dashed off his answer, which read: "Take the barometer to the top of the building and lean over the edge of the roof. Drop the barometer, timing its fall with a stopwatch. Then, using the formula $x=0.5*a*t^2$, calculate the height of the building." At this point, I asked my colleague if he would give up. He conceded, and gave the student almost full credit.

While leaving my colleague's office, I recalled that the student had said that he had other answers to the problem, so I asked him what they were. "Well," said the student, "there are many ways of getting the height of a tall building with the aid of a barometer. For example, you could take the barometer out on a sunny day and measure the height of the barometer, the length of its shadow, and the length of the shadow of the building, and by the use of simple proportion, determine the height of the building." "Fine," I said, "and others?" "Yes," said the student, "there is a very basic measurement method you will like. In this method, you take the barometer and begin to walk up the stairs. As you climb the stairs, you mark off the length of the barometer along the wall. You then count the number of marks, and this will give you the height of the building in barometer units. A very direct method." "Of course, if you want a more sophisticated method, you can tie the barometer to the end of a string, swing it as a pendulum, and determine the value of g [gravity] at the street level and at the top of the building. From the difference between the two values of g , the height of the building, in principle, can be calculated." "On this same tack, you could take the barometer to the top of the building, attach a long rope to it, lower it to just above the street, and then swing it as a pendulum. You could then calculate the height of the building by the period of the precession." "Finally," he concluded, "there are many other ways of solving the problem. Probably the best," he said, "is to take the barometer to the basement and knock on the superintendent's door. When the superintendent answers, you speak to him as follows: 'Mr. Superintendent, here is a fine barometer. If you will tell me the height of the building, I will give you this barometer.'"

At this point, I asked the student if he really did not know the conventional answer to this question. He admitted that he did, but said that he was fed up with high school and college instructors trying to teach him how to think. The name of the student was Niels Bohr. (1885–1962) Danish Physicist; Nobel Prize 1922; best known for proposing the first 'model' of the atom with protons and neutrons, and various energy state of the surrounding electrons—the familiar icon of the small nucleus circled by three elliptical orbits ... but more significantly, an innovator in Quantum Theory. (Received via Internet e-mail; this is an Urban Legend. See <http://www.snopes2.com/> or van der Linden, Peter. *Expert C Programming*, Prentice Hall, Inc., Englewood Cliffs, NJ, 1994.)

Reliability—see Equivalent Forms, Inter-Rater Reliability and Split-Half, Test/Retest Reliability

The characteristic of a measurement instrument that shows the degree to which it consistently assigns scores in spite of minor variations in instrument design and administration (IRMC Measuring Results of Organizational Performance Course). Reliability does not imply validity. Information can be reliable but not valid. However, validity implies reliability. If something is valid, it is also reliable. Reliability is necessary but not sufficient for validity. Reliability can be viewed as a type of internal consistency, whereas validity adds an element of external consistency. Reliability is more relative, validity more absolute in essence.

My commitment is to truth as I see it each day, not to consistency. (Mohandas Gandhi, quoted by Ram Dass in *Journey of Awakening*, Bantam Books, New York, 1978, p. 201.)

Response Rate

The percentage of respondents that return a completed questionnaire for analysis (IRMC Measuring Results of Organizational Performance Course). A low response rate raises doubts as to the statistical validity of the response set. A number of techniques are available to increase the response rate to an acceptable level, including: phone call or e-mail follow-ups.

The reengineering team abandons the familiar and seeks the outrageous. Suspend belief in extant rules, procedures, values. (Michael Hammer and James Champy, *Reengineering the Corporation*, Harper Business, New York, 1993, p. 135.)

It gets late early out here. (Yogi Berra, *The Yogi Book*, Workman Publications, New York, 1998, p. 64.)

Return On Investment (ROI)—see Capital Planning and Investment, Portfolio Management

The ratio of financial savings or increased revenue to the total costs of an organizational investment (IRMC Measuring Results of Organizational Performance Course). A measure for evaluating proposed and actual investments in projects, programs, or initiatives. There are a number of possible techniques and criteria that can be used to determine ROI. Among them are: present value (the value today of a flow of investments and incomes at start and expected in the future at a given or projected discount or interest rate), internal rate of return (the iteratively calculated rate of return based on the flow of investment and income), and payback period (the time for the investment to pay back an amount equal to the original investment). ROIs are used in business case analyses (BCAs) and other methods to evaluate proposed investment and are not peculiar to IT. For an analysis of a particular project see: <http://tsc.wes.army.mil/downloads/CADDSymposium2000/wilber.ppt>.

From Gary Hacker's *HR Metrics News* consolidated from Issues 1-5 (OPM):

Linking Budget to Performance—GSA Regional Operations Perspective:
<http://www.opm.gov/compconf/postconf00/gsa/waters.htm> 4/02. GSA presentation at OPM's Strategic Compensation Conference 2000.

Don't Just Get Them Coffee: A Study in Recruiter ROI: by Beth Minter:
<http://www.erexchange.com/articles/db/5CF83163C2D949A59C0FDF6969D382B4.asp> 6/02. "That's right, we're going to have to measure recruiter's ROI. Just like our counterparts in manufacturing, IT, sales, consulting, or customer service, we will be required to document the quality of our work. And that's going to involve accountability. In particular, we'll have to take responsibility for the performance of our hires. It is the only clear path to illustrating our profitability to our companies rather than our cost."

Measuring the ROI of Training: by Ben Worthen: <http://www.cio.com/archive/021501/roi.html> 3/02. "You know your employees want more training, but how can you tell if you are getting your money's worth?"

The ROI of Human Capital: Measuring the Economic Value of Employee Performance: by Jac Fitz-Enz: <http://www.amazon.com/exec/obidos/ISBN%3D0814405746/ref%3Dnosim/tcmstrainindevel/102-5015943-7201719> 6/02. "We all know that people—not cash, buildings, or equipment—are the lifeblood of any business enterprise. Yet, astonishingly, there has never been a reliable way to quantify the contribution of human capital to corporate profit ... until now."

The Cost of Delay by Alice Snell: <http://www.erexchange.com/articles/db/73E5A8D49D21494899B50BEC70406A03.asp> 5/02. "Assessment of ROI on a system implementation reflects favorably on the HR staff. It shows that the recruiters and other key HR stakeholders who comprise the selection committee realize the importance of carefully evaluating each strategic business decision."

For two decades the great French artist Renoir suffered pain and misery. Rheumatism racked his body and distorted his fingers. As he slowly applied his paint to the canvas, beads of perspiration stood on his brow, from intense suffering. Renoir could not stand but had to be placed in a chair, moved up and down to give him access to various parts of his canvas. Yet he persisted, painting in pain masterpieces of girlhood beauty. Matisse, his disciple, pleaded one day, "Why torture yourself to do more?" Gazing at a favorite canvas, Renoir replied, "The pain passes, but the beauty remains." (Adrian Anderson, *Along the Way*, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall Inc., Englewood Cliffs, NJ, June 1961, p. 359.)

Remember that time is money. (Benjamin Franklin, *Advice to a Young Tradesman*, 1748 from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 104a.)

Reuse—see Software

Usually used to refer to the reuse of existing software programs, subprograms, subroutines, etc. Judicious software reuse is cost effective (efficient) since both development and maintenance costs (thus, life-cycle costs) are low to nil. However, the new development software (often contractor off-the-shelf) must be well matched to the reused software (often government off-the-shelf) regarding technical requirements, interoperability and interfacing, compatibility, and transportability. The reused software must be maintainable—older software may be written in archaic programming languages, for instance, that are difficult or impossible to maintain. Some developers purposely create reusable software for new programs. This adds upfront cost, but creates products designed for reuse and, thus, very cost-effective in that regard. See Isoda's "Experiences on a Software Reuse Project" (*Journal of Systems and Software*, 1995, Vol. 30, No. 2, September, pp. 171–186, and reprinted in *Software Management*, 5th ed., Don Reifer, Ed., IEEE, pp. 558–573) (IRMC Advanced Software Acquisition Management Course).

We shall not cease from exploration
And the end of all our exploring
Will be to arrive where we started
And know the place for the first time.
(T. S. Eliot, "The Four Quartets," 1943, quoted by Jean Shinoda Bolen in *Goddesses in Everywoman*, Harper & Row, San Francisco, 1984, p. 295.)

Reverse Auction

Reverse auctions are "downward price" auctions in which suppliers continue to lower their prices until the auction closes. Buyers watch as competitors lower price in real time. The first Internet reverse auction in the federal government was conducted by the Department of the Navy (based on *Glossary of IM/IT & KM Terms*). A mock reverse auction was held at the Electronic Business Knowledge Fair on August 30, 2001. The bidders were dressed as Amelia Earhart, Benjamin Franklin, and Abraham Lincoln. "Uncle Sam" conducted the auction. Amelia won the contract for the first item (an anchor) by underbidding her competition. Reverse auctions have developed as an extension of the government's acquisition reform initiatives towards commercialization and increased competition. It can result in significant savings.

If one has to jump a stream and knows how wide it is, he will not jump. If he does not know how wide it is, he will jump, and six times out of ten he will make it. (Old Persian Saying, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall Inc., Englewood Cliffs, NJ, June 1961, p. 60.)

RISCC Security Assessment

R stands for risk identification and categorization; I is for IT profiling; S represents selection of controls and elimination of redundancies; C stands for cost calculation; and C stands for consideration of alternatives and risk decision (IRMC Assuring the Information Infrastructure Course).

Long ago lived a seaman named Captain Bravo. He was a manly man who showed no fear in facing his enemies. One day, while sailing the seven seas, a lookout spotted a pirate ship and the crew became frantic. Captain Bravo bellowed, "Bring me my red shirt." The First Mate quickly retrieved the Captain's red shirt and whilst wearing the bright red frock he led his men into battle and defeated the pirates. Later on that day, the lookout spotted not one, but two pirate ships. The Captain again called for his red shirt and once again, though the fighting was fierce, he was victorious over the two ships. That evening, all the men sat around on the deck recounting the day's triumphs and one of the them asked the Captain, "Sir, why do you call for your red shirt before battle?" The Captain replied, "If I am wounded in the attack, the shirt will not show my blood and thus, you men will continue to fight, unafraid." All of the men sat in silence and marveled at the courage of such a manly man. As dawn came the next morning, the lookout spotted not one, not two, but 10 pirate ships approaching. The crew stared at the Captain and waited for his usual reply. Captain Bravo calmly called out, "Get me my brown pants." (Internet e-mail story.)

Risk Assessment/Analysis

This is a major process in program management. A risk assessment identifies risks, vulnerabilities, and threats to a system, system development, or to system users in the field. Risks are analyzed regarding probability of occurrence and effects if they should occur. A chart is normally prepared, mapping each risk on these two axes. Then, appropriate cost-effective responses or countermeasures are created. These may preclude certain risks, but often only mitigate either the probability of occurrence or the effect or impact if it should occur. The risk assessment must be updated during the life of the program, adjusting to changes. In the world of IT, risk assessments are of particular

importance and applicability in computer security (INFOSEC). There are generally three levels of activities ranging from a system security audit to an empirical red team attack. This process may be referred to as a vulnerability assessment or analysis. See Carr, Konda, et al., *Taxonomy Based Risk Identification* (CMU/SEI-93-TR-6, ADA266992, Carnegie-Mellon University, 1993), which describes processes and provides forms to use (IRMC Advanced Information System Acquisition Course).

He that leaveth nothing to chance will do few things ill, but he will do very few things.
(Gregory Benford and David Brin, *Heart of the Comet*, Bantam, New York, 1986, p. I.)

Risk Management—see Risk Assessment

Process concerned with the identification, measurement, control, and minimization of risks to a level commensurate with the value of the assets protected. In IT, it is often applied to information systems security. For software risk see "Attention Shaping and Software Risk—A Categorical Analysis of Four Classical Risk Management Approaches" (Lyytinen, Mathiassen, and Ropponen, *Information Systems Research*, 1998, Vol. 9, No. 3, September, Institute for Operations Research and the Management Sciences) and the *Software Engineering Institute Continuous Risk Management Guidebook* (Carnegie-Mellon University, 1996) (IRMC Advanced Information System Acquisition Course). Also see J. Davidson Frame's "Managing Risk: Identifying, Analyzing, and Planning Responses," (*The New Project Management*, Jossey-Bass, San Francisco, 1994, pp. 74–94) and David Riefer's *Software Management* (1997) (IRMC Advanced Software Acquisition Management Course).

A Framework for Risk Management^a

	Likelihood		
Impact	High	Moderate	Low
Critical	Critical	High	Moderate
High	High	Moderate	Low
Moderate	Moderate	Moderate	Low
Low	Low	Low	Low

a. From NIST Special Publication 800-30, Risk Management Guide: Computer Security first public exposure draft, June 2001.

One of the great paradoxes of our time is that what looks like strength is really weakness and what appears to be weakness is really strength ... Paradoxically, when we admit our weaknesses we are showing our strengths, and when we deny our weaknesses we are exhibiting them. (Susanna McMahan, *The Portable Therapist*, p. 160.)

Winsight tool: (Select Operations; Strategic Planning and Policy Coordination, Software Acquisition Risk Management) <http://www.sed.monmouth.army.mil/se> (select "Related Web sites" then select "Army CECOM SEC Software Insight Tool"). For information: Marilyn Ginsberg-Finner at 732-842-1717.

Department of Defense risk management policies and procedures:
http://www.acq.osd.mil/te/programs/se/risk_management.

Robotics

"A reprogrammable, multifunctional manipulator designed to move material, parts, tools, or specialized devices through various programmed motions for the performance of a variety of tasks"—(Robot Institute of America, 1979) "or Force through intelligence or Where AI meet the real world. Webster says: 'An automatic device that performs functions normally ascribed to humans or a machine in the form of a human'. The word 'robot' was coined by the Czech playwright Karel Capek (pronounced "chop'ek") from the Czech word for forced labor or serf. Capek was reportedly several times a candidate for the Nobel prize for his works and very influential and prolific as a writer and playwright. Mercifully, he died before the Gestapo got to him for his anti-Nazi sympathies in 1938. The use of the word Robot was introduced into his play *R.U.R.* (Rossum's Universal Robots) which opened in Prague in January 1921." Isaac Asimov (famed science fiction author) framed the Laws of Robotics:

Law Zero: A robot may not injure humanity, or, through inaction, allow humanity to come to harm.

Law One: A robot may not injure a human being, or, through inaction, allow a human being to come to harm, unless this would violate a higher order law.

Law Two: A robot must obey orders given it by human beings, except where such orders would conflict with a higher order law.

Law Three: A robot must protect its own existence as long as such protection does not conflict with a higher order law. These are described in Roger Clarke's, "Asimov's Laws for Robotics: Implications for Information Technology," Part 1 and Part 2, *Computer*, December 1993, pp. 53-61 and *Computer*, January 1994, pp. 57-65 (from Robotics FAQs at: <http://www.frc.ri.cmu.edu/robotics-faq/1.html>); <http://ai.iit.nrc.ca/subjects/Robotics.html>; http://www.foresight.org/EOC/EOC_Web_Introduction.html; <http://www-robotics.usc.edu/>; <http://www.robotcup.org/>; (IRMC Critical Information Systems Technologies Course) <http://roboticscollege.com/>.

The dinosaurs became extinct because they didn't have a space program. (Larry Niven, quoted by Arthur C. Clarke, *Ad Astra*, 1996, Vol. 8, No. 3, May-June, p. 14.)

Router

A device or function that guides (routes) information to its intended destination. Routers generally connect networks (e.g., a local area network and the Internet) and determine where to send data based on addresses in messages and devices as well as router settings. Located at juncture points, routers are the traffic control system of the Internet. Routers are usually server systems, but computers (e.g., thick-client personal computers) can also serve as routers. Router control can be a major security issue if not completely integrated into the information system and managed by a central systems administrator. Routers can be prime hacker targets.

A little learning is a dangerous thing. (Alexander Pope, *Essay on Criticism*, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall Inc., Englewood Cliffs, NJ, June 1961, p. 203.)

S

Salesman

A salesman in social network analysis (per Malcolm Gladwell's *The Tipping Point*) is a person with inherent skills in convincing other people. Thus, salesmen can be critical to successful culture change. Further, their placement in the organization can be critical to their success and value within the organization. Salesmen make wonderful knowledge champions and change agents. Nevertheless, it is helpful to integrate such personnel with appropriate mavens and connectors for maximum effect.

Attitude is the top priority; after attitude, talent or gifts are important. (Dave Marinaccio, *All I Really Need to Know I Learned from Watching Star Trek*, Crown Publishing, New York, 1994, p. 64.)

Sampling—see Statistical Significance and Threats to Acceptance

A technique for choosing a group of individuals from a larger population of people such that the group is representative of the population on some designated characteristics. Sample size calculation: <http://www.surveysystem.com/sscalc.htm>, <http://www.international-survey.org/index.html>, <http://www.gallup.com>, <http://www.isrglobalsurveys.com/default.asp> (IRMC Measuring Results of Organizational Performance Course). Sampling, if performed correctly, replaces data gathering from each member of the population in question (which is often impossible or impossibly expensive). Considerable care must be taken to avoid the many potential threats to acceptance. Sampling is often the only feasible means to obtain feedback in a timely and cost-effective manner. Proper experimental design and statistical analysis (e.g., ANOVA, chi-square) must be performed to avoid errors, obtain credibility, and avoid arguments (per my grandfather) that "figures don't lie but liars figure."

The well-nigh ineradicable prejudice of simple-minded persons that everybody is exactly the same as them. Although it is true in general that psychic differences are admitted as a theoretical possibility, in practice one always forgets that the other person is different from oneself, that he thinks differently, feels differently, sees differently, and wants quite different things. Even scientific theories, as we have seen, start from the assumption that the shoe pinches everyone in the same place ... This prejudice is evidently a vestige but a very potent one—of a primitive frame of mind which is based essentially on an insufficiently differentiated consciousness. Individual consciousness or ego-consciousness is a late product of man's development. Its primitive form is a mere group consciousness. (C. G. Jung, *Civilization in Transition*, CW10, Princeton University Press, Princeton, NJ, 1964, p. 135–136.)

Sampling Validity

A form of content-oriented validity in which an analytical argument is made that the items fully represent the factor being measured by reference to prior research or authorized formal documentation (IRMC Measuring Results of Organizational Performance Course).

Substituting rules for judgment starts a self-defeating cycle, since judgment can only be developed by using it. (Dee Hock at VISA, quoted by Thomas J. Peters and Robert H. Waterman, Jr., *In Search of Excellence*, Warner Books, New York, 1982, p. 278.)

Scalability

The ability of a system to respond to and support exponential increases in activity both in the short-term and over time (based on *Glossary of IM/IT & KM Terms*). Pilot programs are often employed to test the effects of proposed enterprise systems. Scalability then becomes a major consideration not directly addressed in the pilot program. The remaining risk is that which worked on a small scale (e.g., in the pilot) may not work at a larger scale (the entire enterprise). Some enterprise resource plans, for instance, are designed for small or mid-size users and are simply inadequate to large businesses or enterprises. In addition, an organization must consider future growth, not only in users, but also in functionality. As a system is successful, and this success permeates the organization, people will devise a continuing stream of expansions in usage. Thus, extrapolating from the past can be quite misleading and highly inaccurate. The famous story of Xerography relates that the inventor ran out of funds without quite completing the invention of the Xerox machine. So, he went to IBM, offering the company a large equity (partial ownership) in the business if they would provide \$1 million to complete the development. IBM hired a consulting accountancy firm (of high repute) to perform a tradeoff analysis. They compared Xerox versus carbon paper, concluding that the investment was not worthwhile. Eventually, the inventor found the funds elsewhere, completed development, and the rest is history. The analysts forgot the human factor—once a dramatically new development takes place, people extend it into near-infinite new areas and applications. This is consistent with Thomas Kuhn's popularization of the paradigm process of the Philosophy of Science described in his classic masterpiece, *The Structure of Scientific Revolutions*.

Flash powder makes a more brilliant light than the arc lamp, but you cannot use it to light your street corner because it doesn't last long enough. Stability is more essential to success than brilliancy. (Richard Lloyd Jones, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall Inc., Englewood Cliffs, NJ, June 1961, p. 370.)

Script Kiddies

Unsophisticated hackers who use other hacker's software packages (scripts). Hacker sites post such scripts for others to use—promoting the talents of the hacker who designed them. They often warn the script kiddies that such scripts have short half-lives—cybercops become aware of them quickly—putting the script kiddies at risk of detection.

Role confusion is an unconsciously motivated defence to which individuals have recourse in order to avoid the anxiety produced by disjunctions between their personalities and the demands of the roles they carry. (Elliott Jaques, *The Changing Culture of a Factory*, Dryden Press, New York, 1952, p. 300.)

Search Engine

A program that searches documents for specified keywords or phrases and returns a list of the documents where the keywords were found. Although *search engine* is really a general class of programs, the term is often used to specifically describe programs such as Alta Vista and Excite, which enable users to search for documents on the World Wide Web. Typically, a search engine works by sending out a spider to fetch as many documents as possible. Another program, called an indexer, then reads these documents and creates an index based on the words contained in each document (based on *Glossary of IM/IT & KM Terms*). Research is under way to improve upon both the search process itself and on the indexing function. Some vendors provide applications that will index the contents of specified computer drives so that the user can later search for (and quickly find) items included in those drives. Of course, the function must be run periodically to include new materials. Various algorithms (such as Bayesian statistics) are employed in indexing. However, a Web search engine may return thousands of responses that are not necessarily prioritized accurately in terms of human values. Artificial intelligence methods are being applied to searching, especially neural networks and case-based reasoning (CBR) tools. The Department of the Navy Chief Information Officer's Knowledge-Centric Organization CD (version 2.0) incorporates a CBR tool for its guided search function. Such tools provide a more content-oriented search versus the usual keyword search techniques provided by most Web search engines.

When you know a thing, to hold that you know it; and when you do not know a thing, to allow that you do not know it. This is knowledge. (Confucius, *The Wisdom of Confucius*, Peter Pauper Press, Mt. Vernon, NY, 1963, p. 43.)

Seat Management—see Navy/Marine Corps Intranet (NMCI)

An outsourcing vehicle providing desktop-type computing as a unified service, including day-to-day operational support to the user and network. Examples include the National Aeronautics and Space Administration's outsourcing desktop initiative (ODIN), the General Service Administration's seat management contract,²⁷ and the recent Navy/Marine Corps Intranet (NMCI) contract. The Department of the Treasury and the Health Care Financing Administration are also using the Odin contract. Odin has 50,000 seats and \$4-13 billion over 10 years. With a seat management contract, the government does not own any of the computers or software, but buys a computing service from the contractor. Users can contract for a spectrum of levels of services included in the contract. In today's business environment of shrinking budgets, fewer employees, increasing demand for faster and better services, more reliance on technology, and a shortage of IT workers (see the Hudson Report, *Workforce 2000*), the Department of Defense needs methods to focus its efforts and its workforce. Outsourcing efforts (such as seat management) can help. According to Gartner, the 5-year total cost of ownership (TCO) for a seat is:

Estimated TCO Costs per Seat^a

1987	1995	2000
\$19,296	\$41,439	\$45,000

a. Generally 75 percent service + 25 percent hardware and software.

Gartner estimates present costs to vary from \$8,288 to \$10,786 per seat (as of 2000); the Harris Corp. study estimated present per seat TCOs at \$8,224 versus \$8,399 for seat management. Thus, seat management is not always the cheapest solution. GSA awarded its contracts in July 1998 and opened them up for government-wide acquisition contract-like use by other agencies and activities. They are 5-year multiple award contracts with 5-year options. GSA initially issued task orders against them for its own use. A seat management program office was established. Prime contractors include: IBM, EER, FDC Technologies, PRC, DYNACORP, Wang Government Services, and Multimax. Government agencies are generally required to report to Congress if outsourcing efforts will result in the loss of more than 10 government employees, but this may not apply if the personnel are moved to fill needed vacancies. In addition to the federal contracts, the State of Connecticut has a seat management contract with EDS Corp. for \$1 billion over 7 years (IRMC New World of the CIO Course).

More recently, the Department of the Navy (DON) awarded the NMCI \$7-billion contract to a large team headed by EDS Corp. Despite predictions regarding seat costs, the NMCI cost was considerably lower than these pessimistic predictions. Congress and OSD did slow down and restrict initial NMCI efforts, due to many political and psychological considerations. Unfortunately, these tend to be self-fulfilling prophecies. Nevertheless, NMCI has now begun to install and operate systems in the Navy. In addition to the usual costs and benefits discussed regarding seat management, NMCI addresses current security vulnerabilities by introducing smart cards, public key infrastructure, etc., and rectifies the huge range of capabilities now extant in DON—standardizing them into a manageable set that are automatically refreshed per industry standards. NMCI potentially will support 400,000 users, the largest seat management program by far. The initial 40,000 seats or so should demonstrate its technical feasibility but not necessarily its potential cost-effectiveness.

Despite Congressional support for outsourcing and A-76, Congress is presently unwilling to authorize more Base Realignment and Closure Act rounds or to allow NMCI to include depots. There is a continual stress between making the government more responsive and cost-effective and -efficient on one hand and political realities of Congressional districts and economics on the other. This ambiguity is perhaps inherent in the American political system. Change management efforts need to consider such political, as well as psychological or cultural, factors when planning for success. NASA seat management <http://outsource.gsfc.nasa.gov/>; U.S. Army seat management; <http://pmscp.monmouth.army.mil/> (IRMC Critical Information Systems Technologies Course). The State of Connecticut's seat management contract: \$1 billion, 7 years, with EDS Corp., was for all computing operations statewide. It has been said that seat management requires a federal culture change to relinquish control, become a user vice owner, and orient services towards measurable levels, making desktop services a utility (IRMC Advanced Software Acquisition Management Course).

[Artifacts, procedures, etc., are] yesterday's congealed dreams ... a process of petrification.... weightless ideals turning into heavy artifacts ... living things turned into stone. (Stephen Denning, *The Springboard*, Butterworth-Heinemann, Boston, 2001, p. 192.)

Secondary Data Collection

The use of existing data that was originally measured for other purposes. Primary data collection is the collection of data for the first time to meet a specific evaluation purpose (IRMC Measuring Results of Organizational Performance Course).

Life can only be understood backward, but it must be lived forward. (Kierkegaard, quoted by George Steiner in *Top Management Planning*, MacMillan & Co., New York, 1969, p. 208.)

Section 508 (Rehabilitation Act) (29 U.S.C. 798) 8/7/98—see Networked Improvement Community, Voice Application Networks, and Extensible Markup Language

The Accessibility Standards, Section 508, Rehabilitation Act (of 1973) Amendments of 1998. Section 508 requires that federal agencies must ensure comparable accessibility to persons with disabilities whenever that agency uses electronic or IT, unless such access would impose an undue burden. For further information, see the Section 508 standards at: <http://www.access-board.gov/news/508-final.htm> (*Glossary of IM/IT & KM Terms*).

Limited numbers of copies of a Section 508 video have been available from the Department of the Navy Chief Information Officer (DON CIO). The Department of Commerce established its Committee on Resources for Electronic Accessible Technology to End Users (CREATE), and the government established the interagency Council on Accessible Technology (COAT); see Ann Mercier's "GSA, COAT Team to Tackle Computer Access for Disabled" (*Federal Computer Week*, August 5, 1991) (IRMC New World of the CIO Course). Also, see <http://www.disability.gov/>; <http://www.section508.gov/>; <http://www.access-board.gov/>; and/or <http://www.tricare.osd.mil/cap/>, where CAP is the Computer/Electronic Accommodations Program. The section states that "When developing procuring, maintaining, or using electronic or IT, each federal department or agency shall ensure access to information and data by persons with disabilities comparable to access available to persons without disabilities." However, National Security Systems are exempt.

The Architectural and Transportation Barriers Compliance Board (Access Board) was to define standards by February 27, 2000, for inclusion in the Federal Acquisition Regulations; "undue burden" must be explained in procurement documentation; the Federal Communications Commission proposes to apply it to telecommunications services (e.g., voice mail) but not to Web pages or e-mail. The National Federation of the Blind has sued America Online (as a "public accommodation") for lack of compliance with the Americans with Disabilities Act (ADA) (IRMC Advanced Information System Acquisition Course). See Susan Turnbull's article on the Federal Architecture and Infrastructure Committee of the Federal CIO Council's guide, *Extending Digital Dividends: Public Goods and Services that Work for All*, on the Federal CIO Council Knowledge Management Working Group CD distributed by the DON CIO. She identifies three promising Internet-based technologies: voice application networks, extensible markup

language, and networked improvement communities, which could “dramatically extend the reach, quality, and usefulness of public information.” For more information, call 202-501-6214 or write susan.turnbull@gsa.gov.

One action is worth more than a thousand sighs. (Jacob Immanuel Schochet, *Chassidic Dimensions*, Vol. 3 of The Mystical Dimension trilogy, Kehot Publication Society, Brooklyn, NY, 1990, p. 207.)

Secure Electronic Transaction (SET)

“A secure payment protocol developed by MasterCard® and Visa® designed to ensure security for bank card transactions over the Internet. It denies merchants access to credit card information, thus keeping it secure between the shopper and the bank” (*PC Magazine Online*: <http://www.pcmag.com/>). SET requires a customer to create a wallet, enclosing encrypted credit card numbers. To make a purchase, the customer sends the encrypted credit card number to the merchant’s server; the merchant digitally signs the payment message and forwards it to an online bank; the bank decrypts all the information, runs the credit or charge, signs the purchase request, stores it for future reference, and sends a receipt back to the merchant and customer.

He has out-soared the shadow of our night;
Envy and calumny and hate and pain,
And that unrest which men miscall delight,
Can touch him not and torture not again;
From the contagion of the world’s slow stain
He is secure, and now can never mourn
A heart grown cold, a head grown grey in vain.

(Percy Bysshe Shelley [1792–1822], *Adonais*, 1821 XL, from *The Oxford Dictionary of Quotations*, Oxford University Press, New York, 1980, p. 499, No. 21.)

Secure Sockets Layer (SSL)

Transmission security standard developed by Netscape Communications to enable secure commercial transactions to take place over the Internet. Utilizing encryption, it creates a secure relationship between the client and server, allowing server authentication, data encryption, and data integrity (based on *Glossary of IM/IT & KM Terms*). SSL protects ordering and credit card information, but it does not protect the merchant. It is one-way encryption. A small lock is generally shown at the bottom right of the purchaser’s screen. Also, browsers normally warn the user concerning use of secure sites (unless the user turns off the warning mechanism). Merchant risks under SSL are the same as for phone or catalog orders—primarily based on credit card risks. SSL lacks some of the privacy and digital certificate risks and complications of public key infrastructure (PKI), but it is also, essentially, a one-way (unidirectional) system. Thus, it is not comparable to PKI or pretty good privacy (PGP) and is capable of meeting all of their operational requirements. See <http://www.celocom.com>, Charles Breed, *PKI: The Myth, the Magic and the Reality*, http://networking.earthweb.com/netsecur/article/0,12084_615851_5,00.html, used in IRMC Managing Networked Security in a Networked Environment Course). Web site addresses with “https” (versus http) have been SSL-enabled; the client portion is already

built into the browser (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

<http://wp.netscape.com/security/techbriefs/ssl.html>

<http://developer.netscape.com/tech/security/ssl/howitworks.html>.

Our watchword is security. (William Pitt, Earl of Chatham, 1708-1778, from *The Oxford Dictionary of Quotations*, Oxford University Press, New York, 1980, p. 374, No. 1.)

Security and Assurance

One of the 10 federal chief information officer (CIO) competencies, specified by the Federal CIO Council Executive Board, included in the IRMC's curriculum for the CIO certificate (IRMC New World of the CIO Course).

The Security Systems Engineering Capability Maturity Model (SSE CMM)^a

Level	Management	Organizational	Engineering
5. Optimizing (work the measures)	Process change management	Technology change management	Defect prevention
4. Managed (measure the work)	Quantitative process management		Security validation Security vulnerability analysis Quality management
3. Defined (work the plan)	Security coordination External coordination Inter-group coordination Integrated project management	Organization process focus Organization process definition Training program	Security concept Security verification Evidence management Peer reviews
2. Repeatable (plan the work)	Requirements management Project planning Project tracking and oversight Subcontract management Quality assurance Configuration management		Security requirements Security design Security implementation
1. Initial (work and work)	Ad hoc processes	Ad hoc processes	Ad hoc processes

a. John Egan, "IS Threats to Software Intensive Systems," Software Technology Conference, April 27 to May 2, 1997.

Memo: How to clean the cat

1. Thoroughly clean the toilet.
2. Add the required amount of shampoo to the toilet water, and have both lids lifted.
3. Obtain the cat and soothe him while you carry him towards the bathroom.
4. In one smooth movement, put the cat in the toilet and close both lids (you may need to stand on the lid so that he cannot escape). CAUTION: Do not get any part of your body too close to the edge, as his paws will be reaching out for anything he can find.
5. Flush the toilet three or four times. This provides a "power wash and rinse" which I have found to be quite effective.

6. Have someone open the door to the outside and ensure that there are no people between the toilet and the outside door.
7. Stand behind the toilet as far as you can, and quickly lift both lids.
8. The now-clean cat will rocket out of the toilet, and run outside where he will dry himself.

Sincerely, The DOG. (Internet e-mail joke.)

Selection Interaction—see Threats to Acceptance

A threat to acceptance of evaluation results that says the particular selection of cases led to these results and that if another set of cases were used, the results could have been very different (IRMC Measuring Results of Organizational Performance Course)

As one of my favorite professors once said, "The best students are those who never quite believe their professors." And "One ought not to reject the data merely because one does not like what the data implies." (Jim Collins, *Good to Great*, Harper Business, New York, 2001, p. 16.)

Selective Perception, Frame Blindness, and Confirmation Bias—see Framing

Process whereby a person only sees things that he or she expects or that confirm his or her hypothesis or viewpoint and does not see what is unexpected or contradicts his or her hypothesis or viewpoint. Generally, this is considered an unconscious process, but it can also be a conscious one. It parallels a debate in which one promotes one's position while ignoring the opposite position. Similarly, a news report might not include any literal untruths, but its import or impact could be misleading by ignoring conflicting or additional (statistical) information or knowledge. Con artists use such techniques in performing fraudulent schemes. Such presentations, if not inadvertent, can be considered to be second-order prevarications. (Literal untruths are first-order prevarications.) Many instances of selective perception are unintentional and may be created through lack of training or experience. For instance, new implementers of KM may overemphasize the technical aspects (or the human aspects) giving an unbalanced view of KM. Such a lack of balance can result in unsuccessful implementations of KM or any other endeavor. Integrated product teams help to offset selective perception by employing a diverse group of people with very different perspectives and even values. The 12-person jury system in the United States is another attempt to short-circuit this potential problem. Imposition of Circular A-76 creates a significant emotional experience that can force a change in framing and selective perception. Notable examples of selective perception et al. include: "Heavier-than-air flying machines are impossible" (Lord Kelvin, president of the British Royal Society, c. 1895), "Reagan doesn't have the presidential look" (United Artists Executive, dismissing Reagan as a candidate star for the movie "The Best Man" in 1964), "A severe depression like that of 1920-1921 is outside the range of probability" (*Harvard Economic Society Weekly Letter*, November 16, 1929), "They couldn't hit an elephant at this dist—" (last words of Union Army General John Sedgwick during the Battle of Spotsylvania, 1864) from J. Edward Russo and Paul J. H. Schoemaker's *Decision Traps* (Simon & Schuster, 1990). Usage of output versus outcome measures is a form of frame blindness. People's reluctance to admit mistakes makes them vulnerable to confirmation bias and related phenomena (IRMC Leadership for the 21st Century Course).

People tend to see what they want to see. Out of a mass of detailed information they tend to pick out and focus on those facts that confirm their prior perceptions and to disregard or misinterpret those that call their perceptions into question. (Robert Fisher and William Ury, *Getting to Yes*, Bruce Patton, Ed., Penguin Books, New York, 1981, p. 23.)

Semantic Analysis (Semiotics)

The analysis of meaning in text. Software programs that analyze documents by identifying concepts and their relative importance to the subject of the document and to each other. These utilities can form the basis for accurate search and knowledge discovery. Presently, however, they are statistical in nature and are not capable of producing meaning by themselves. They do, however, suggest possibilities to human analysts. Meaning creation is context based and inherent in converting information into knowledge. Often, considerable tacit knowledge is required to accurately perform such conversions. Software does not contain tacit knowledge—once tacit knowledge is codified it has been converted to explicit knowledge.

Things are not always what they seem. (Phaedrus, c.8 A.D., *Fables*, Book IV, Fable 2, 1.5, *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 129.)

http://carbon.cudenver.edu/~mryder/itc_data/semiotics.html

<http://academic.brooklyn.cuny.edu/soc/semiotics/>.

General Semantics (GS):

<http://www.kcmetro.cc.mo.us/pennvalley/biology/lewis/gs.htm>; "The word is not the thing, the map is not the territory" <http://www.esgs.org/uk/gshome.htm>, <http://www.generalsemantics.org/>, <http://www.general-semantics.org/>.

Semantic Differential Scale—see Central Tendency

A scale represented by opposing pairs of words or phrases separated by typically seven scale points (IRMC Measuring Results of Organizational Performance Course).

Letting something remain good when it can become great—is a secular sin. (Jim Collins, *Good to Great*, Harper Business, New York, 2001, p. 161.)

Senior Privacy Officer (SPO)—see Confidentiality, Integrity, Availability, Nonrepudiation, and Authentication (CIANA), CXO

The senior government official responsible for formulating, developing, implementing, and promoting effective privacy protection strategies and programs to ensure the highest degree of public confidence in the organization's integrity, efficiency, and fairness (*Glossary of IM/IT & KM Terms*). The SPO is comparable to some commercial organizations' chief privacy officers. Following the initial entry of government offices into the Internet via a multiplicity of Web sites and pages. Policy was formulated to better protect the privacy of government employees as well as the enterprise. For instance, sensitive but unclassified information should not be made public. Information security audits (e.g., the General Accounting Office audit of the Department of State in 1998) have

indicated that additional attention needs be paid to information privacy, in accordance with information security and CIANA principles.

Anyone who follows a middle course is called a sage. (Maimonides, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 272.)

Sensitive But Unclassified (SBU)

Formerly identified as for official use only (FOUO), SBU identifies information that does not receive a security classification (e.g., confidential) but is considered sensitive (e.g., government proprietary or private). The Computer Security Act of 1987 (P.L. 100-235) defines sensitive information as: "any information, the loss, misuse, or unauthorized access to or modification of which could adversely affect the national interest or the conduct of federal programs, or the privacy to which individuals are entitled" under the Privacy Act of 1974, as amended. The Privacy Act requires federal agencies to keep personal information about individuals "confidential." It is not, however, referring to the Department of Defense security classification (IRMC Managing Networked Security in a Networked Environment Course).

I've read some of your modern free verse and wonder who set it free. (John Barrymore, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983 p. 182.)

Service Level Agreement (SLA)

A contractual vehicle between a service provider and a customer that specifies performance requirements, measures of effectiveness, reporting, cost, and recourse. They usually include specified repair turnaround times for users. Seat management contracts such as the Navy/Marine Corps Intranet (NMCI) rely heavily upon SLAs. Individual activities (e.g., military bases) specify how many of each optional functionalities and service support levels they wish to have—with the corresponding costs associated with these levels. This enables users to tailor the contract to their needs. Initially, NMCI had three basic performance levels, several different configurations (portable and nonportable), and three different repair levels. However, the contractor is also required to maintain performance levels relative to industry standards over time (i.e., technology refreshed).

The only way to deliver to the people who are achieving is to not burden them with the people who are not achieving. (Jim Collins, *Good to Great*, Harper Business, New York, 2001, p. 53.)

Services—see Components and Departments

1) The four military services—Army, Air Force, Marine Corps, and Navy—within the Department of Defense: USA, USAF, USMC, and USN.

2) The seven uniformed services of the United States Government (USG) such as the U.S. Coast Guard (USCG). The USCG (though part of the Department of Transportation in time of peace) becomes a part of the USN in time of war.

3) Useful labor that does not produce a tangible commodity.

4) Performing any of the business functions auxiliary to production or distribution (Webster's New Collegiate Dictionary, 1976).

In their own eyes, their very identities are enmeshed with their sense of the organization. (Stephen Denning, *The Springboard*, Butterworth-Heinemann, Boston, 2001, p. 13.)

Shared Data Engineering (ShaDE)

A strategy identifying how to share data resources at the application level. It promotes interoperability by merging data administration and database administration disciplines. Data element standards are designed and engineered for reuse and easy downloading by users in reference data sets (RDS). Data and domain values are also included (IRMC Advanced Information System Acquisition Course).

33. Space is a completely unforgiving environment. If you screw up the engineering, somebody dies (and there's no partial credit because *most* of the analysis was right...). (David Akin, professor, University of Maryland, "Akin's Laws of Spacecraft Design" [received via Internet e-mail] and confirmed by Dr. Akin dakin@umd.edu or DAKIN@SSL.UMD.EDU. See http://spacecraft.ssl.umd.edu/academics/akins_laws.html.)

[Author's Note: Remember the bombing of the Chinese Embassy.]

Shukko

In Japan, many companies employ the practice of "shukko," wherein a company will loan an employee to a supplier or vice versa for either a short or long term. For short-term assignments, the loaning company pays the bill; for long-term ones, the two firms split the costs.

The people of each firm immerse themselves in the routines of the other, thereby gaining access to the partner's stock of tacit knowledge. A clear benefit is that learning takes place without the need first to convert tacit knowledge to explicit knowledge. This saves time and resources and better preserves the original knowledge base ... Engineers employed by a "parent" assembler such as Toyota will work for sustained periods on the floor of a supplier in order to assist it in meeting Toyota's stringent standards of quality and schedule of price reductions. Conversely, a supplier of key components on whom Toyota depends (such as Denso or Toshiba for automotive electronics) will locate its people at Toyota to ensure that components are designed and produced to Toyota's specifications.²⁸

Practice is the best of all instructors. (Publilius Syrus, first century B.C., Maxim 439, from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 125.)

Simple Object Access Protocol (SOAP)

Provides a way for applications to communicate with each other over the Internet, independent of platform. SOAP relies on extensible markup language (XML) to define the format of the information and then adds the necessary hypertext transfer protocol (HTTP) headers to send it (*Glossary of IM/IT & KM Terms*).

I had an aunt in Yucatan
Who bought a Python from a man
And kept it for a pet.
She died, because she never knew
These simple little rules and few;—
The Snake is living yet.

(Hilaire Belloc, 1870–1953, *The Python*, from *The Oxford Dictionary of Quotations*, Oxford University Press, New York, 1980, p. 40, No. 4.)

Simplified Acquisition Procedures—see Micro Purchases

Government purchases from small businesses between \$2,500 and \$100,000, for which electronic commerce is the preferred means. Micro purchases are under \$2,500.

Small Business Administration: <http://www.SBAonline.SBA.gov>.

Strike whilst the iron is hot. (Rabelais [1534 A.D.], book II from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 125.)

Simulation—see Model and Pilot Project

A method in which a target process is artificially created through analogy. A typical implementation is to approximate a proposed process/product via computer software (there are specific tools and languages for such purposes). Various combinations of circumstances and variables can then be run through the computer simulation to compare and contrast the results. The value of the simulation depends upon how closely it models or depicts reality. Like any other analogy or metaphor, no simulation is perfect. However, simulations can provide significant information relatively quickly and inexpensively in many cases. Per Arie de Geus ("Planning as Learning," *Harvard Business Review*, 1988, 88202 March-April), "One characteristic of play, as the Tavistock Institute in London has shown, is the presence of a transitional object. For the person playing, the transitional object is a representation of the real world. A child who is playing with a doll learns a great deal about the real world at a very fast pace" (IRMC Leadership for the 21st Century Course). <http://www.disa.mil/> (IRMC Critical Information Systems Technologies Course).

<http://www.marketplace-simulation.com/>

http://www.simulearn.net/?source=overture_simulations

http://www.model.com/?v=205732&p=7298793&s=4359952&c=hdl_overture_keywo

rd.gif

<http://www.microsoft.com/games/>

<http://www.uchsc.edu/sm/chs/>

http://www.disa.mil/coe/aog_twg/twg/coptwg/DIICOEMSTRSBriefv3.ppt

http://www.disa.mil/coe/crcb2000/Secretariat/Briefings/dec99_intro.ppt

<http://vsearch.dtic.mil/search97/s97is.vts?action=View&VdkVgwKey=http%3A%2F%2Fwww%2Edisa%2Emil%2Fcoe%2Faog%5Ftwg%2Ftwg%2Fmstwg%2F&DocOffset=1&DocsFound=212&QueryZip=%3CSum%3E%28%5B%2E90%5D%28%3CMany%3E%3CSte>

m%3E%60simulation%60%29%2C+%5B%2E10%5D%28%3CYesNo%3E%28%28%3CMany%3E%3CStem%3E%60simulation%60%29+%3CIn%3E+%60title%60%29%29%29&Collection=disa&SortField=Score&SortOrder=Desc& DISA POC: carr@mitre.org.

So geographers, in Afric maps
With savage pictures fill their gaps,
And o'er unhabitable downs
Place elephants for want of towns.
(Jonathan Swift, *On Poetry, A Rhapsody*, 1733, from *Familiar Quotations* by John Bartlett,
Little, Brown & Co., Boston, 1968, p. 136a.)

Single Point Of Failure (SPOF)

A vulnerable point in a system for which there is no adequate backup or fallback position; a failure there results in failure of the entire system. An SPOF is a weak link in the continuity of operations chain. SPOFs are addressed in risk management. However, SPOFs are not always mitigated since some have inherently low probabilities of failure (MTBF). The risk of failure must be balanced against the effect of a failure. Thus, there is a mathematically calculable probability that all the air in a room will coalesce in one corner and the people in the room will asphyxiate. This probability is so low, however, that no one (amongst the sane) takes precautions against it. Nevertheless, SPOFs are the first factors to consider when attempting to increase system availability or continuity.

It must not be supposed that the conference table possesses the magic property of generating wisdom when rubbed simultaneously by a dozen pairs of elbows. (William E. Utterback, *Group Thinking and Conference Leadership*.)

Situational Leadership

A model and interactive process for supervision of employees developed by Zigarmy and Blanchard. The current model is called "Situational Leadership II." It is characterized by four supervisory styles appropriate for four employee developmental levels—but with strategies for emergency circumstances as well. It predicates that a new employee's needs change as the employee grows in capabilities such that need for direction decreases over time, but the need for support rises and then falls over time (normally distributed). See my *Acquisition Review Quarterly* article comparing and contrasting Jaques and Blanchard: <http://www.dsmc.dsm.mil/pubs/arq/2000arq/pollock.pdf>.

When we speak to other people with an intention or an identification in our mind as to who *they* are or what *they* should be doing, that essentially closes the frame of the possibilities of what they can become. (James Low, *Simply Being*, Vajra Press, London 1994, p. 143.)

To be an effective managerial leader a person must really value the opportunity to work with subordinates and value being able to unleash their enthusiastic and effective collaboration. (Elliott Jaques and Stephen D. Clement, *Executive Leadership*, Cason Hall & Co., Arlington, VA, 1991, p. 72.)

Effective performance can be hindered or disrupted by emotional disturbance, lack of motivation, social alienation, family economic distress, or lack of support. (Elliott Jaques, *Creativity and Work*, International Universities Press Inc., Madison, CT, 1990, p. 122.)

Managers have to switch from supervisors to facilitators, enablers, and developers of people and their skills. Process teams don't need bosses, they need *coaches*:

Managing is a particular skill ... there is little correlation between excelling in a work skill and being a good manager. (Michael Hammer and James Champy, *Reengineering the Corporation*, Harper Business, New York, 1993, p. 77.)

Small Computer Systems Interface (SCSI)

Disk drive interface that serves personal computers and servers at 20–40 Mbps. May be replaced by fiber channel interfaces between servers and clustered storage devices, since they are six times faster than SCSI (IRMC Data Management Strategies and Technologies Course).

Every dogma has its day. (Israel Zangwill, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983 p. 202.)

Smart Card—see Common Access Cards; <http://www.c3i.osd.mil/org/cio/index.html> (IRMC Critical Information Systems Technologies Course)
<http://www.c3i.osd.mil/org/cio/smartcard.pdf>

A credit-card-size device, normally for use by personnel, that contains one or more integrated circuits and may also employ one or more of the following technologies: magnetic stripe; bar codes, linear or two-dimensional; noncontact and radio frequency transmitters; biometric information; encryption, and authentication; and photo identification (*Glossary of IM/IT & KM Terms*). The Navy is presently implementing common access cards (or CACs, a form of smart card) to support the Navy/Marine Corps Intranet and standardize identification across the department. The CAC is intended to serve both as physical security or building access identification as well as electronic identification (via embedded digital signature and, in future, biometric information). Individual computers will need to include smart card readers (also called card acceptance devices or CADs) in order to implement this technology if “contact” cards are used. Contactless cards use radio frequency signals (wireless technology). Optical cards use lasers for read/write. When used as authentication, smart cards function as “tokens.” Smart cards use the chip operating system. They presently range from \$2 to \$10 each. Vendors generally guarantee about 10,000 read/write cycles per card. Storage capacity of the EEPROM (electronically erasable, programmable read-only memory) ranges from 8,000 to 128,000 bits. One thousand bits is approximately equal to a sentence of text (or 128 bytes). Smart cards are protected by encryption. ISO 7618 limits smart cards to a 9,600-baud transmission rate. Controllers can vary from 8 to 32 bits running at 25–32 MHz (IRMC Managing Networked Security in a Networked Environment Course)
http://www.smartcard.gov/tutorial/smartcard_oyer.htm. The Departments of Treasury (DoT) and Defense are expanding the use of stored value cards to replace cash and paper payroll systems for military personnel. DoT has become the world's largest issuer of smart cards. The stored value program has exceeded \$80 million in transfers for 3M transactions on 375,000 smart cards. They were used extensively in Bosnia and supporting bases in Hungary (*Leadership for the New Millennium: Delivering On Digital*

Progress and Prosperity, 3rd annual report of the U.S. Government Working Group on Electronic Commerce).

He who hesitates is a damned fool. (Mae West, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 341.)

Smart Card Senior Coordinating Group (SCSCG)

A governing body established by the DoD to develop and implement department-wide interoperability standards for use of smart card technology and a plan to exploit smart card technology as a means for enhancing readiness and improving business processes. This group reports to the Department of Defense Chief Information Officer (*Glossary of IM/IT & KM Terms*).

You see things and say "Why?" But I dream things that never were; and I say "Why not?" (George Bernard Shaw [often repeated by Robert F. Kennedy]. *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 445.)

Sneaker Net

Transfer of electronic information by people physically moving electronic media between computers. Most frequently this refers to someone transferring a file to a floppy disk (or read-write CD or zip disk), walking it over to another computer, and loading the media into the second computer. This process has often been done in order to provide an "interface" without physically interfacing the computers in question. However, it can pose a security risk and make systems vulnerable to viruses and other malware as well as social engineering attacks.

It is just as important to know when to let go of an old idea as it is to know when and how to accept a new one. Refusing to give up a weak, resentful, or outmoded idea is a common cause of failure. Did you ever see a sailor climbing a rope hand over hand? He lets go with one hand in order to reach up and take a higher hold on the rope. He climbs by letting go of the old handholds and grasping new ones. You and I can climb spiritually by the same process, letting go of old ideas by denial and grasping new and higher ones by affirmation. (Lowell Fillmore, *Weekly Union*, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall Inc., Englewood Cliffs, NJ, June 1961, p. 312.)

Social Capital

The value resulting from the interactions of people across networks built on relationships. A pictorial view can be made via social network analysis. Statistical means can provide insight into the distribution of social capital within an organization. Connectors are high-value nodes in a social network; they have very high social capital. Social capital is generally considered to be a part of intellectual capital (along with human and corporate capital). It is difficult to measure and is often, therefore, undervalued within an organization. Some organizations have eliminated connectors during downsizing with devastating effect, especially in the long term. Social capital responds to varying environmental and cultural conditions. Some companies have successfully increased social capital through physical building designs and tacit or explicit support by upper management (cf. *In Good Company* by Don Cohen and Laurence Prusak).

Knowledge networks and communities of practice can also positively affect an organization's social capital. Surprising to the researchers themselves, a study has shown that a new chief executive officer can have an immediate and profound effect upon the entire organization.

Have you heard the story of the lady who, when shopping, was tempted to buy a pound of tomatoes from a barrow boy? When she had walked a few yards she stopped, examined her change, and concluded that the vendor had given her a shilling too much. So she went back and told him. "You're right, ma'am," declared the barrow boy, pocketing the shilling. "Here, just give us hold of that there bag for a minute. " To the lady's surprise he opened the bag, picked out a bad tomato, and put a good one in its place. "You was honest with me, ma'am," he replied, seeing her questioning glance, "and I'll be honest with you." (H. L. Gee, *500 Tales to Tell Again*, Epworth Press London quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall Inc., Englewood Cliffs, NJ, June 1961, p. 190.)

Social Engineering

Types of hack attacks that employ social or human approaches (as opposed to more technological approaches). Since most users will provide information asked for by standard windows on their screens, hackers can insert windows into attacked sites (e.g., via JavaScript) to obtain user passwords, etc. Even simpler, social engineers can go through trash bins to look for passwords or other information that can help them enter a system. The famous hacker Mitkin obtained logon rights by calling unsuspecting personnel and conning them into providing system access by claiming he was a new employee or by some other ruse. People who break into systems in order to promote some kind of ideological agenda are called hacktivists.

When everyone is responsible, ultimately no one is responsible. (Dave Marinaccio, *All I Really Need to Know I Learned from Watching Star Trek*, Crown Publishing, New York, 1994, p. 52.)

Social Network Analysis (SNA)

A technique used to analyze a network (generally an organization or enterprise) to ascertain the nature and characteristics of the communications presently taking place within the organization. It usually results in a pictorial mapping of organizational relationships and flows showing its major operational links (channels) and nodes, thus revealing informal organizational effects. It can also reveal important information regarding individuals' and subunits' importance to organizational communications. This tool can be a very powerful and practical one for chief information or chief knowledge officers. Connectors are readily identified via SNA. It may also provide some insight into the identification of mavens.

Nature has given to men one tongue, but two ears, that we may hear from others twice as much as we speak. (Epictetus, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall Inc., Englewood Cliffs, NJ, June 1961, p. 217.)

SoftWare (S/W)—see Object-Oriented Programming, Capability Maturity Model (CMM)

A series of computer instructions that performs a particular task is called a “program.” Software is one medium for programs. The two major categories of software are “system software” and “application software.” System software includes the operating system and all the utilities that enable the computer to function. Application software includes programs that do real work for users. For example, word processors, spreadsheets, and database management systems fall under the category of applications software (adapted from *Glossary of IM/IT & KM Terms*). Software is an executable form of information. It is executed by a processor chip (e.g., Intel Pentium) and runs on random access memory (RAM). It is differentiated from firmware which is also programmable (micro-code) but which runs off of read-only memory (ROM), such as the BIOS chip, which boots up computers, and from hardware (the touchable components including mouse, keyboard, screen, and central processor unit (CPU)). Programs, thus, can be created in any of the three media (hardware, firmware, or software) in increasing levels of adaptability. Hardware and firmware programs have been used when speed is essential and flexibility is not. Programs are mostly software today since processor and memory speeds have increased spectacularly and costs have dropped dramatically. Further, the present speed of technological advance and resulting acquisition reform initiatives encouraging use of contractor off-the-shelf software and hardware tend to preclude hardware and firmware solutions.²⁹ Some tools have been developed to facilitate improved software development.

The Software Engineering Institute (a FFRDC) of Carnegie Mellon University (CMU) developed the software CMM to improve software consistency. There are five CMM levels, from no repeatability (CMM level 1) to very repeatable (CMM level 5). Some organizations have attempted to require CMM level 3. Precious few organizations have achieved level 5. SEI has also developed similar models for software management and related disciplines. The CMM does not guarantee any level of software quality, despite comparisons between CMM level 3 and ISO 9000/1. This parallels measurement theory, where something can be reliable (CMM) without being valid (quality). Computer-aided software engineering (CASE) tools have also been developed to assist programmers to create better programs easier. I-CASE is an integrated set of such tools aimed at generating code from specifications via a complete software environment. CASE builds upon computer-aided design (CAD). See <http://osiris.sunderland.ac.uk/rif/metacase/metacase.home.html> (IRMC New World of the CIO Course). For more information on the SEI CMM, see <http://www.sei.cmu.edu/products/courses/intro/intro.cmm.html> and Richard Kuzara’s “SEI Capability Maturity Model’s Impact on Contractors” (*COMPUTER*, IEEE Computer Society, January 1995) (IRMC Advanced Information System Acquisition Course). See the Department of the Navy’s Joint Logistics Commanders’ Joint Group on Systems Engineering’s Practical Software Measurement, (version 2.1, March 1996); Christensen and Ferens’ “Using Earned Value for Performance Measurement on Software Development Projects,” (*Acquisition Review Quarterly*, 1995, Spring, pp. 155–169, <http://www.dau.mil/pubs/arq/arq95.asp>); <http://ricis.cl.uh.edu/>; (IRMC Measuring Results of Organizational Performance Course). <http://members.aol.com/lpangvb3/soft.htm> (IRMC Critical Information Systems Technologies Course).

Software Capability Maturity Model^a

Level	Focus	Key Process Areas (KPA's)
5. Optimizing	Continuous process improvement	Defect prevention Organization process innovation Organization improvement deployment
4. Quantitatively managed	Product and process quality	Statistical process management Organization product alignment Organization process performance
3. Defined	Software acquisition processes and organizational support	Organization process focus Organization process definition Organization training program Integrated software management Software product engineering Intergroup coordination Peer reviews
2. Repeatable	Project management processes	Requirements management Software project planning Software project tracking and oversight Software supplier management Software quality assurance (QA) Software configuration management (CM)
1. (Initial) Competent people and heroics	None	

a. From Software CMM (SW-CMM version 2.0, draft B (IRMC Advanced Software Acquisition Management Course)).

Also, see "Software's Chronic Crisis" by W. Gibbs (*Scientific American*, 1994, September, pp. 86-95); IEEE/EIA 12207 *Standard for Software Life Cycle Processes* or https://www.sciamarchive.com/html/ppv_frames.asp, Robert Glass' "The Software Crisis—Is It a Matter of Guts Management?" See also *Software Management* (Donald Riefer, 1993), Druffel and Heilmeier's "Report of the DSB Task Force on Acquiring Defense Software Commercially" (*Crosstalk*, 1994, Vol. 7, No. 12, December), Tom DeMarco's *Why Does Software Cost So Much?* (Dorset House, 1995) and Edward Yourdon's classics: *Decline and Fall of the American Programmer* (Prentice Hall, Inc., 1993) and *Rise and Resurrection of the American Programmer* (Prentice Hall, Inc., 1996). Software productivity for top programmers is 22 times as great as for worst programmers. A 1990 study of software acquisition in a large federal organization revealed that only 1.5 percent of software was used as delivered; only 3 percent was used after modification; 19 percent was used but abandoned within 2 years; 29 percent never met contract requirements; 47.5 percent was delivered but never used. Of commercial software projects, 50 percent were over schedule; 33 percent were cancelled; and 75 percent were operational failures. The U.S. Air Force hosts a valuable software technology conference annually in Salt Lake City and publishes *Crosstalk* (<http://www.stsc.hill.af.mil>). Formerly, the Department of Defense developed software in accordance with DoD-STD-2167A and then MIL-STD-498;

however, with the advent of acquisition reform, ISO/IEC 12207 now provides an international standard for software life-cycle processes. See "The Mythical Man-Month," (Fred Brooks, *Datamation*, 1974, December, pp. 44–52) (IRMC Advanced Software Acquisition Management Course).

osiris.sunderland.ac.uk/~cs0pco/CASE.ppt
<http://www.sei.cmu.edu/publications/documents/92.reports/92.tr.015.html>
http://www.sei.cmu.edu/legacy/case/case_sites.html.

Much—perhaps most—behavior in the world is not very rational. (Robert Fisher and William Ury, *Getting to Yes*, Bruce Patton, Ed., Penguin Books, New York, 1981, p. 160.)

Software Engineering Institute (SEI), <http://www.sei.cmu.edu/>

SEI is an federally funded research and development center run by Carnegie Mellon University for the Department of Defense. SEI created the original capability maturity model (and some additional ones).

SEI Software Technology: <http://www.sei.cmu.edu/engineering/technology.html>.

Flattery is all right if you don't inhale. (Adlai Stevenson. *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 181.)

Software Quality—see Quality

RADC Software Quality Factors^a

<i>Quality Factor</i>	<i>Definition</i>	<i>Candidate Metric</i>
Correctness	Extent to which the software conforms to specifications and standards	<u>Defects</u> LOC
Efficiency	Relative extent to which a resource is utilized (i. e., storage, space, processing time, communication time)	<u>Actual resource utilization</u> Allocated resource utilization
Expandability	Relative effort to increase software capability or performance by enhancing current functions or by adding new functions or data	<u>Effort to expand</u> Effort to develop
Flexibility	Ease of effort for changing software missions, functions, or data to satisfy other requirements	(0.05)(average labor days to change)
Integrity	Extent to which the software will perform without failure due to unauthorized access to the code or data	<u>Defects</u> LOC
Interoperability	Relative effort to couple the software of one system to the software of another	<u>Effort to couple</u> Effort to develop
Maintainability	Ease of effort for locating and fixing a software failure within a specified time period	(0.1)(average labor days to fix)
Portability	Relative effort to transport the software for use in another environment (hardware configuration, and/or software system environment)	<u>Effort to transport</u> Effort to develop
Reliability	Extent to which the software will perform without any failures within a specified time period	<u>Defects</u> LOC
Reusability	Relative effort to convert a software component for use in another application	<u>Effort to convert</u> Effort to develop
Survivability	Extent to which the software will perform and support critical functions without failure within a specified time period when a portion of the system is inoperable	<u>Defects</u> LOC
Usability	Relative effort for using software (training and operation—e.g., familiarization, input preparation, execution, output interpretation)	<u>Labor days to use</u> Labor years to develop
Verifiability	Relative effort to verify the specified software operation and performance	<u>Effort to verify</u> Effort to develop

a. From IRMC Advanced Information System Acquisition Course.

What is experienced as psychic effort in work—the intensity or weight of responsibility—is entirely concerned with the discretionary content of work. To conform to rules and regulations and other prescribed aspects of work requires knowledge; you either know or you do not; but it does not require the psychic effort of discretion and decision, with its attendant stirring of anxiety. I was able to demonstrate that weight or level of responsibility is objectively measurable in terms of the maximum spans of time during which discretion must be exercised by a person on his own account. The longer the span of time, the more the unconscious material that must be made conscious, and the longer must uncertainty about the final outcome and the anxiety about one's judgment and discretion be tolerated. In short, the longer the path toward gratification chosen ... the greater is the

experience of psychic effort or work. (Elliott Jaques, *Creativity and Work*, International Universities Press Inc., Madison, CT, 1990, pp. 332-333.)

Software process improvement: <http://www.dacs.dtic.mil/>
S/W Engineering Process Office (SEPO): <http://sepo.nosc.mil/>
Practical Software Measurement: <http://www.psmc.com/>
The Broadcast Coordinator at 703-461-0370; SPMNWeb@spmnn.com
SPAWAR S/W Project Tools: <http://www.spmn.com/download.html>
Software Program Manager's (SPMN's) Internet home page: <http://www.spmn.com>.

Spam or Spamming

Spam is unwanted e-mail that an unscrupulous seller sends out to a great many e-mail accounts (without identifying particular buyers). It can overload a person's e-mail account with salacious materials (the usual content). Spamming is the process of sending spam. The spammers may include a note promising to desist if the recipient responds with a request. Usually, however, the spammer only wishes to verify that the account is active—since spammers obtain large lists of targets, many of which are no longer valid. Thus, it is recommended that the recipient NOT respond to the spammer. Rather, more sophisticated e-mail software allows one to filter out the spam from known senders. Unfortunately, these senders frequently change their addresses so that such filtering is only partly effective. <http://all.net/> (IRMC Critical Information Systems Technologies Course).

SPAM information: <http://www.ecofuture.org/jnkmail.html>
<http://spam.abuse.net/>
SPAM avoidance: <http://www.sunbelt-software.com/product.cfm?id=930&affid=overt>
<http://www.inboxdoctor.com/>
<http://www.removemenow.com/>
<http://www.arachnoid.com/lutusp/antispam.html>.

Once in Persia reigned a king, Who upon his signet ring
Graved a maxim true and wise, Which, if held before his eyes
Gave him counsel at a glance Fit for any change or chance;
Solemn words, and these are they: "Even this shall pass away."
(Theodore Tilton, quoted by Chris R. Warnken, *Rosicrucian Digest*, 1976, Vol. LIV, No.

11, p. 13.)

Spectrum Management

The oversight of allocations and regulations governing the U.S. radio frequency spectrum; this oversight balances the demands for airwave frequencies by commonly used technologies, such as microwaves, radio stations, television, pager services, and mobile phones, with the need for airwaves for national defense (military) and public safety (police, emergency and fire). The Department of Commerce's National Telecommunications and Information Administration manages the U.S. radio frequency (*Glossary of IM/IT & KM Terms*). There has been increasing pressure to transfer control of

portions of the Department of Defense's assigned segments over to the private sector for commercial purposes.

Most of what we call management consists of making it difficult for people to get their work done. (Peter Drucker, quoted by Karl Albrecht and Ron Zenke in *Service America!* Warner Books, New York, 1985, p. 106.)

Spiders—see Crawlers

Software applications that index Web sites, e-mail, or other designated knowledge objects automatically and push the updated content to requesting users. Some robust applications learn where an organization's most valuable information is located, no matter the media—e-mail, documents, presentations, etc. (USA).

Somewhere, something incredible is waiting to be known. (Carl Sagan, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 437.)

Spiral Model of Software Development

A general methodology for developing software that incorporates a cyclic approach into its scheduling and implementation. It has replaced the prior waterfall method, in which a one-way flow down is used. It improves risk management and security but may not be suitable for small projects and requires skilled risk analysis personnel. Other software methods include: incremental development, rapid prototyping, evolutionary acquisition, and software reuse (IRMC Advanced Software Acquisition Management Course).

When one hears of disastrous schedule slippages in a project ... the disaster is due to termites, not tornadoes. (Fred P. Brooks, *The Mythical Man-Month*, Addison-Wesley, Reading, MA, 1975, p. 154.)

Fundamentally, esoteric fulfillment is never an uneventful progress along a straight line. It ever proceeds in spirals. We return again and again, apparently to where we were, but a little wiser on each spiral through perfectly mundane experiences which force the truth of life upon us. It is up to the aspirant to achieve all he can upon each spiral of the way. (Raymund Andrea, "The Conflict of Opposites," *The Andrea Lectures*, Ancient Mystical Order Rosae Crucis, 1991, p. 49.)

Split-Half Reliability

A technique for estimating instrument reliability by comparing the total score from one half of the items to the total score from the other half—usually, the instrument is divided into odd and even items (IRMC Measuring Results of Organizational Performance Course).

I once heard a tale of a man
who split himself in two.
The one part never changed at all;
the other grew and grew.
The changeless part was always true.
The growing part was always new.
And I wondered, when the tale was through,

which part was me and which was you.

(Orson Scott Card, *Children of the Mind*, Tom Doherty Books, New York, 1996, p. 351.)

Stakeholders

Any individual, group, or organization that can place a claim on or influence the organization's resources or outputs, is affected by those outputs, or has an interest in or expectation of the organization (Defense Information Systems Agency *Performance Planning Guidance for Fiscal Year 1998*, p. F-5). All the people affected by the design and use of an IT (or other) system or application. Typically this superset includes many subsets such as developers, customers, users, CXOs, financiers, testers, maintainers, and others. Such people have a stake in the success of the product or program. Their differing perspectives, however, often result in conflicting requirements, value judgments, and political stances. "Where you stand depends on where you sit."

The hottest places in Hell are reserved for those who, in a time of great moral crisis, maintain their neutrality. (Dante, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 320.)

Standard Deviation (Sigma or σ)

A statistic that is proportional to the amount of variability in a set of scores. If a set of scores has a normal distribution approximately 68 percent of the scores will be within one standard deviation of the mean) (IRMC Measuring Results of Organizational Performance Course). See <http://www.dsmc.dsm.mil/pubs/arq/2000arq/pollock.pdf> for an extensive chart delineating the normal distribution and its standard deviations. Geometrically, the standard deviation describes the width of the particular normal distribution. The mean describes its height. The two variables indicate that the curve is nonlinear since linear functions have only one independent variable. Arithmetically, however, the standard deviation is an indication of the dynamic range of the samples comprising the distribution.

All generalizations are dangerous, even this one. (Alexander Dumas, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall Inc., Englewood Cliffs, NJ, June 1961, p. 8.)

The ability to take another person's argument seriously is the precondition for civilization. (Carl Jung, quoted by A. Lindley Jr., "Chicago's Analytical Congress," *Transformation*, C. G. Jung Institute of Chicago, 1992, Vol. 23, No. 1, Fall, p. 11.)

Standard Generalized Markup Language (SGML)

A standard for how to specify a document mark up language or tag set. Such a specification is itself a document type definition. SGML is not in itself a document language, but a description of how to specify one (*Glossary of IM/IT & KM Terms*). HTML is built upon or an implementation of SGML.

Travel, in the younger sort, is a part of education; in the elder, a part of experience. He that travelleth into a country before he hath some entrance into the language, goeth to

school, and not to travel. (Sir Francis Bacon, 1561–1626, "Of Travel," 18, *Essays*, from *The Oxford Dictionary of Quotations*, Oxford University Press, New York, 1980, p. 27, No. 27.)

Standardization

The process of documenting, reviewing, and approving unique names, definitions, characteristics, and representations of knowledge, information, and data according to established procedures and conventions (DoD 8320.1-M, *Data Administration Procedures*) (IRMC Data Management Strategies and Technologies Course). Standardization implies centralized control of configurations. The Department of Defense (DoD) uses configuration management and designated standards (e.g., the defense data dictionary system [DDDS] and joint technical architecture [JTA]) to establish and maintain standards. With the advent of acquisition reform, the vast majority of DoD and military specifications and standards (formerly included in the DoD Information Security System) were cancelled (many were transferred to industry or commercial standards). The American National Standards Institute and other independent standards organizations maintain important standards that are used or invoked by DoD. Some standards (e.g., extensible markup language) are in process; some include a degree of ambiguity (e.g., X.509), and some are de facto (Internet). The common operating environment (COE) is the DoD attempt to standardize the software environment. Standards are touted as a means to save money and expedite development. The capability maturity model attempts to standardize the software development process to achieve reliability and reproducibility. ISO 9000 standards address quality in the international arena. The price of standardization, however, can be a decrease in individual creativity and paradigmatic breakthroughs. See Martin Libicki's *Standards: The Rough Road to the Common Byte* (CACT, INSS, NDU, May 1995) (IRMC Advanced Software Acquisition Management Course).

Department of Defense Specifications and Standards:

http://www.dla.mil/j-6/log-edi/erp_ipt/031301/13_14mardirjecpody1.ppt

Department of Defense Dictionary of Military Terms:

<http://www.dtic.mil/doctrine/jel/doddict/>

DoD Index of Specifications and Standards:

http://stinet.dtic.mil/str/dodiss4_fields.html.

You cannot put the same shoe on every foot. (Publilius Syrus, Maxim 596, first century B.C., from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 126.)

Standard Operating Environment (SOE)

A standard suite of system software furnished by Defense Information System Agency System Support Office (DISA SSO) for use in supporting application production and test domains. The operating system and the suite of standard system products are called the SOE (*Glossary of IM/IT & KM Terms*).

The Pentagon recently found it had too many Generals and offered an early retirement bonus. It promised any General who retired straight away his full annual benefits plus \$10,000 for every inch measured in a straight line between any two points on the General's body, with the General getting to select any pair of points he wished. The first man, an Air

Force General, accepted. He asked the pension man to measure from the top of his head to the tip of his toes. Six feet. He walked out with a check of \$720,000. The second man, an Army General, asked them to measure from the tip of his outstretched hands to his toes. Eight feet. He walked out with a check for \$960,000. When the third General, a grizzled old Marine, was asked where to measure, he told the pension man: "From the tip of right big toe to the back of my right heel." The pension man suggested that perhaps the General might like to reconsider, pointing out the nice checks the previous two Generals had received. The Marine insisted and the pension expert said it would be fine. He asked the General to remove his right shoe and sock. He did. The pension man took one look at the General's right foot and said, "Oh my gosh General ... where is the front of your foot!?" The General replied, "In Vietnam." (Internet e-mail joke.)

Statistical Regression—Compare with Central Tendency

A threat to acceptance of evaluation results which states that, if subjects were chosen on the basis of their scoring especially low on a pretest, an increase in performance may be caused in part by the natural tendency of extreme scores to mediate when a test is repeated (IRMC Measuring Results of Organizational Performance Course). This principle may also be applicable to genetics. If a group forms from people of like mind (e.g., a commune), their children tend towards the usual normal distribution of people such that by the third generation (if not sooner), so many of the residents have deviated from the original uniting principle that the community has great difficulty staying together (assuming that the forming or uniting principle has a negative effect upon or is disagreeable in some way to the average person rather than individually beneficial). Under such circumstances, the unity and cohesiveness of the original community dissolves and it can only survive as an entity under external pressure (e.g., threat and violence of totalitarianism). Such a circumstance is not stable and should eventually collapse (e.g., the Soviet Union).

There are old men of three, children of a hundred. (*Japanese Proverbs*, Peter Pauper Press, Mt. Vernon, NY, 1962, p. 42.)

Statistical Significance

Since a given set of measures might vary because of some chance fluctuations in the conditions at the time and place of measurement, statistical techniques check the probability that the results are not due to chance. If the results pass the check, they are considered statistically significant (<http://www.surveysystem.com/signif.htm>) (IRMC Measuring Results of Organizational Performance Course). Statistical significance depends upon the number of samples with reference to the size of the population being measured and the error factors involved in measurement. Frequently, statistical significance is given in terms of a specified confidence level.

We believe whatever we want to believe. (Demosthenes, 348 B.C., quoted by Hal Lindsey in *The Late Great Planet Earth*, Bantam, New York, 1973, p. 1.)

Statistics—see Analysis of Variance, Chi-Square, Correlation, Cross-Tabulation, Regression Analysis, Sampling, and Standard Deviation and T-Test

A branch of mathematics dealing with the collection, analysis, interpretation, and presentation of masses of numerical data. A collection of quantitative data. Quantities computed from samples.

When a hundred clever heads join in a group, one big nincompoop is the result, because every individual is trammelled by the otherness of the others. (Margaret J. Rioch, "The Work of Wilfred Bion on Groups," *Psychiatry*, 1970, p. 64.)

Steganography

A method of hiding files in graphic figures. S-tools can use four encryption algorithms (IDEA, DES, triple DES, or MDC). It uses MD5 (message digest) to hash the pass phrase to 128 bits. It spreads the file's bit pattern across the least significant bits (LSBs) of the image color levels (IRMC Assuring the Information Infrastructure Course). Images are formed electronically using specific spots or spaces on the screen called pixels. Each pixel has a designated byte(s) of data associated with it. The number embedded in that particular byte describes the spot regarding color, intensity, shade of gray, etc. The most significant bits (MSBs) of that byte are more apparent in effect on the observer. The LSBs have lesser effect. The MSB is comparable, for instance, to the 100's column in the decimal system and the LSB to the 1's column. Obviously, the number in the 100's column will usually have more impact than the number in the 1's column. Steganography replaces the original numbers in the LSBs with the bits of a message—so the viewer doesn't notice the difference when looking at the graphic picture on a screen, but someone who knows where to "look" electronically can recover the message embedded in the LSBs. From the Internet:

Steganography: communicating while hiding the existence of the communication.

Messages to all STEGANO-L members have to be sent to the address: stegano-l@as-node.jena.thur.de

The anonymous file transfer protocol archive associated with STEGANO-L is: <ftp://ftp.thur.de/pub/software/stegano/> <http://www.iks-jena.de/mitarb/lutz/security/stegano.html>

The manager of the mailing list server is Lutz Donnerhacke: Lutz.Donnerhacke@Jena.Thur.De

<http://www.cl.cam.ac.uk/~fapp2/steganography/>

<http://www.centurionsoft.com/>

<http://members.tripod.com/steganography/stego.html>.

It is structure that enables creativity ... without structure, there is nothing for creativity to get leverage upon. (Stephen Denning, *The Springboard*, Butterworth-Heinemann, Boston, 2001, p. 193.)

Storage Area Network (SAN)

An enterprise storage solution with gigabit networks that rely on high-speed interconnect technologies (e.g., Fibre Channel). SANs have higher throughput, greater

distances, more connectivity options, better scalability, fault recovery, and diagnostics. They are useful for: data management, backup and recovery, archiving, disk mirroring, shared storage, and data sharing (IRMC Data Management Strategies and Technologies Course).

I have made this rather long letter because I haven't the time to make it shorter. (Blaise Pascal. *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 508.)

Storytelling

A method to unobtrusively and effectively illustrate a point, convince listeners, and effectively transfer knowledge. An organizational story is a detailed narrative of management actions, employee interactions, or other relevant events communicated within the organization. Storytelling is a powerful transformational tool, especially when the story is credible (regarded as true and accurate), relevant to the organization and its people, portable to organizational activities, and can be easily visualized by the listeners who unconsciously place themselves into the story. Steve Denning of the World Bank describes such stories as "springboard" stories in his classic work, *The Springboard*. Such means are especially effective for social network "salesmen" as described by Malcolm Gladwell in *The Tipping Point*. Similar to KM as a whole, storytelling is as old as human history. Storytelling has been used for ages to socialize new members of society and teach them tacit knowledge. Stories can penetrate the mental filters of the conscious mind, eliciting responses from deeper (unconscious) levels. According to Carl Jung, these can be personal or collective levels of the unconscious. The latter are archetypal and common across humanity. Thus, they are potential channels of deep, instantaneous communications and knowledge, if not wisdom. Modern movies and shows may be archetypal in nature, such as the *Star Wars* epic films. They are readily comparable to such ancient classic stories as the Mesopotamian *Gilgamesh* and the Welsh *Mabinogion*.

The human animal has a deep psychological need for some kind of story about how life began and how it will culminate and toward what purpose. The need for a story is so great that most people never question the stories they are reared with and seem concerned only that they have a story—any story. And so dedicated are people to their respective group story that they are generally inclined to consider everyone's story as false or mistaken. Millions have given their lives in the defense of their stories. Millions more have been slain for their refusal to adopt other people's stories. The saddest thing about it all is this: We have all had the same story all along, only it had been told in different words, through different symbols, rituals, and ceremonials ... we are beginning to find out our stories are all one story; only the mythical portrayal of the story differs ... Generally, we perceive myths as lies. Fairy tales. But actually, myths address deep truths. A myth is a story that is true but not factual. (Schacter-Shalomi, *Paradigm Shift*, Aronson, Northvale, NJ, 1993, p. 299–300.)

No single story can ever reveal everything. The story is necessarily a selection, and the extent of the partial representation depends on the angle of vision. Understanding the angle of vision of a story is a key to understanding it as a representation of reality. The angle of vision also determines the impact that the story has for a particular audience. (Stephen Denning, *The Springboard*, Butterworth-Heinemann, Boston, 2001, p. 173.)

Stovepipe

A system with vertical communications and reporting (i.e., only via a chain of command). Most legacy systems had stovepipe architectures both programmatically and technically. Checks and balances were external to a relatively independent program office. Systems were defined individually except where specific interfaces were required. This approach is based on classical management and tended to accentuate individual responsibility and accountability. It matched well to organizational wiring charts (official authority delegations), requirements documents, and culture. With the advent of acquisition reform, integrated product teams, downsizing, a more teamwork oriented approach to problems and responsibilities, open systems, systems thinking, and other current trends and influences, stovepipes have been branded as anachronistic (if not archaic) and the term has become derogatory. This is a case of the pendulum effect. Rationally, particular systems to be developed should be analyzed to determine how open and interoperable they should be. Interoperable is a transitive term, nothing is "interoperable" per se, something can only be interoperable *with* something else (the transitive object).

If we confuse the orders of abstraction we can disregard about any evidence, thereby maintaining our traditional beliefs. (Steven Lewis,
<http://www.kcmetro.cc.mo.us/pennvalley/biology/lewis/lewis.htm>.)

Strategic Planning—see Performance- and Results-Based Management

One of the 10 federal chief information officer (CIO) competencies, specified by the Federal CIO Council Executive Board, included in the IRMC's curriculum for the CIO certificate. The Government Performance and Results Act requires agencies to create 5-year strategic plans (revised every 3 years). The plans include: mission statement; outcome related goals and objectives; descriptions of processes, technologies, human, capital, information resources required; identification of key external factors; and description of evaluations used to establish goals and objectives. The four A's—adaptability, accountability, alignment and awareness—are also applicable to information management strategic planning. *Office of Management and Budget Circular A-11* (Part 2) contains guidance on the preparation and submission of strategic and annual performance plans. The Congressional Report Card includes ten evaluation factors, six of which are required in the agency's strategic plan: comprehensive mission statement, general goals and objectives, strategies to achieve the goals and objectives, relationship between the long-term goals and annual goals, key external factors outside the agency's control, how program evaluations will be used to revise strategic goals. The other four (nonstatutory) factors are: treatment and coordination of crosscutting functions, data capacity and reliability for evaluation, problem and risk analysis, and Congressional and stakeholder consultations. There's also a "bonus factor" of how realistic performance measures are (IRMC New World of the CIO Course). While Murphy's Law says that if anything can go wrong, it will, strategic planning is essential to a CIO. It provides a unifying and integrating structure; enables autonomous, coordinated action; promotes organizational cohesiveness through sense of shared direction, intent, and purpose; promotes shared values, beliefs, and assumptions; promotes concentrated effort;

encourages environmental awareness; and promotes flexible responses within a changing environment. Strategic plans are not limited to the former Soviet Union's type of 5-year plan; commercial ones tend to average 12- to 18-month cycles, and much less in some industries—especially in IT. A good strategic plan is the roadmap from “as is” to “to be.”

There is a story about a snail who, one bitter cold morning in January started to climb the frozen trunk of a cherry tree. As he slowly moved upward a beetle stuck his head out of a crack in the tree and said, “Hey, buddy, you're wasting your time. There aren't any cherries up there.” But the snail kept right on going. “There will be when I get there,” he said.³⁰

Strategic planning has positive secondary (or side) effects. It tends to elucidate assumptions, presuppositions, and preconceived conclusions. In addition, it promotes self-discipline and training as well as systems thinking.

See OASD (C³I)'s IT Management (ITM): Supporting National Defense (ITM Strategic Plan, version 1.0, March 1997). Legislation:

<http://www.c3i.osd.mil/c3ia/itprmlegisl.html>.

OMB guidance: <http://www.whitehouse.gov/omb/circulars/a11/cpgtoc.html>

Links to agency plans:

http://www.whitehouse.gov/omb/budintegration/scorecards/agency_scorecards.html

Congress' scores on plans: <http://freedom.house.gov/results/>

Plans with GAO reviews: <http://www.govexec.com/dailyfed/0997/090897b1.htm>

Council for Excellence in Government reviews: <http://www.excelgov.org/>

Self-study modules: <http://www.csuchico.edu/mgmt/strategy/>

Case studies: <http://govinfo.library.unt.edu/npr/library/studies/list.html>

<http://govinfo.library.unt.edu/npr/library/studies/aboutcs.html>.

Pitfalls in government strategic planning:

1. A mission statement so broad and general it could apply to other agencies—it should be concise, results-oriented, and agency specific enough.
2. General goals and objectives that are more process than outcome-oriented.
3. Neglecting to solicit input from Congress and affected stakeholders.
4. Lack of use of program evaluations to establish goals and strategies.
5. Identifying strategies for achieving the goals that are actually just descriptions of current activities.
6. Weak linkages between strategic goals and annual performance plan goals.
7. Inadequate linkage to the budget.
8. Inadequate discussion of external factors.
9. Major management problems not addressed.
10. No coordination of cross-cutting functions.
11. Little discussion of data capacity issues—make sure your information systems are able to provide the relevant performance data to achieving goals (IRMC Measuring Results of Organizational Performance Course).

Also, see "Learning from Best Practices in Strategic Planning (Pegi Panfely and Leigh-Ann Sonnier, in *Strategy and Leadership*, 1996, September-October), *Reinventing Strategic Planning for a Dynamic Environment* (American Productivity and Quality Center, Houston, 1997), and *Balancing Measures: Best Practices in Performance Management* (NPRG, 1999, August, <http://govinfo.library.unt.edu/npr/library/papers/bkgrd/balmeasure.html>, p. 61) (IRMC Measuring Results of Organizational Performance Course). Strategic Implementation Plan: <http://www.hpcc.gov> or [gopher://gopher.hpcc.gov](http://gopher.hpcc.gov).

A great artist was asked which of his paintings he considered to be the best. He thoughtfully paused for a moment and then replied, "My next one." (W. H. Clark, "The Mystic in Time and Space," *Rosicrucian Digest*, 1973, Vol. LI, No. 9, p. 33.)

Strategic Programming

Strategic programmers move toward known goals and knowable futures. They extrapolate a set of known conditions into the future. Strategic programming parallels data mining as well as management. It is contrasted with strategic thinking below. Strategic programming is well suited to stable and complex planning environments such as airline scheduling.

Somebody said that it couldn't be done
But he with a chuckle replied
That maybe it couldn't, but he would be one
Who wouldn't say so till he tried.
So he buckled right in with the trace of a grin
On his face. If he worried, he hid it
He started to sing, as he tackled the thing
That couldn't be done, and he did it.

Somebody scoffed, "Oh you'll never do that."
At least no one ever has done it.
But he took off his coat and he took off his hat
And the first thing we knew, he'd begun it.
With a lift of his chin and a bit of a grin
Without any doubting or quibble,
He started to sing as he tackled the thing
That couldn't be done and he did it.

There are thousands to tell you it cannot be done
There are thousands to prophesy failure
There are thousands to point out to you one by one
The dangers that wait to assail you
But just buckle in with a bit of a grin
Just take off your coat and go to it
Just start to sing as you tackle the thing
That cannot be done and you'll do it.
(Edgar A. Guest, "It Couldn't Be Done.")

Strategic Thinking—see Convergent Thinking, Nonlinear Systems, Systems Thinking

Strategic thinkers move towards the unknown and unknowable future. They envision a future and reshape existing conditions to meet that future. Strategic thinking parallels

data exploration as well as leadership. It is also similar to systems thinking, but contrasts with strategic programming. These two concepts were developed by Paul Raymond and Henry Mintzberg and discussed in the IRMC's New World of the CIO Course. Kennedy's prediction of the man on the moon depicts strategic thinking.

Dichotomy Models Paralleling Strategic Programming and Thinking

From present to future	Strategic programming	Data mining	Freud	Analysis	Plan	Sj ³¹	Linear
To future from present	Strategic thinking	Data exploration	Jung	Synthesis	Vision	NF ³²	Nonlinear

If opportunity doesn't knock, build a door. (Milton Berle)

Stratified Sampling

The final sample of subjects must have a predetermined distribution of certain attributes so selection takes place as in random sampling, except that once the predetermined number of cases in a certain category have been selected, further candidates with that attribute are discarded (IRMC Measuring Results of Organizational Performance Course). In essence, a predetermined number of random samples is selected (in a random order) from each attribute subgroup. The result can be more optimal than true random sampling (with the same number of samples chosen), since the subgroups are distinctive and, if not fully represented, may skew the randomly sampled results. Stratified sampling precludes such a situation. It can thus be conducted accurately with fewer samples.

For 13 years I taught my tongue not to tell a lie; and for the next 13, I taught it to tell the truth. (The Koretzer Rabbi, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 486.)

Structured Query Language (SQL) (acronym pronounced "sequel" or spelled out)

SQL is a standardized query language for requesting information from a database. The newer Microsoft database is called SQL server.

The room was thick with two conversations, the one we were having and the one we were choosing not to have. (Lawrence Block, *Even the Wicked*, William Morrow & Co., NY, 1997, p. 283.)

Supervisory Control And Data Acquisition (SCADA)—see Critical Infrastructure Protection

The brain and central nervous systems of our critical infrastructures including sensors, communications, and master control systems. The increasing reliance on computerized systems for the control and operation of key infrastructures in advanced societies for their economic, social, political, and military strength is both a boon and a vulnerability for these systems and societies. This includes the supply of energy (electricity, gas, oil), the management of transportation (railroads, air traffic control, motor vehicle movement), the transfer of digital wealth (electronic funds transfer, digital banking, control of stock exchanges), and the operation of the very telematic media that support the entire

structure. If one looks below the surface of almost any segment of daily life in modern society, one finds a computer (Daniel Kuehl, "Strategic IW: A Concept" Canberra, Australia, Australian National University's Strategic and Defence Studies Centre, 1999, working paper No. 332, p. 7). See *"SCADA and Related Systems: Critical and Vulnerable Elements of Domestic Components of National and Economic Security"*, (Richard Berardino, National Defense University, June 10, 1996) (IRMC Assuring the Information Infrastructure Course).

It is a mistake to give power to people who want it too much. Often they're too concerned with the trappings and the perks. (Warren Bennis, "Lessons in Leadership," *Bottom Line Personal*, 1996, Vol. 17, No. 13, July 1, p. 14.)

Supplier Relationship Management (SRM)

By integrating its suppliers into its business processes, an enterprise can achieve efficiencies and better serve its customers (become more customer-centric or outcome oriented). The emphasis is on value engineering for customers versus simply cost reduction. Indeed, the enterprise tailors its treatment of its suppliers to strengthen critical relationships. SRM is complementary to some reengineering efforts: in *Reengineering the Corporation*, Michael Hammer and James Champy describe the truck company that gave its tire supplier access to its production records, in exchange for that supplier's guarantee that the proper tires would be available as needed (just in time availability) as trucks proceeded down the production line. In this manner the truck company eliminated its tire inventory and logistics challenges.

The extent of the definition of SRM varies considerably: Some include enterprise resource planning (ERP), supply chain planning (SCP), supply chain execution (SCE), and third party logistics (3PL) within SRM, and some do not. It has been said that, "[SRM] has emerged as enterprises seek to create a more disciplined and strategically managed structure around all supplier relationships to ensure that the entire enterprise is in harmony and to achieve an optimal return on supplier relationships. This goes beyond e-procurement and strategic sourcing to embrace the collaborative creation and management of supplier-enterprise products and processes. Suppliers and enterprises become an integrated entity centered on the goal of meeting customer needs in a way superior to competitors" (*Enterprises Drive Competitive Advantage Through SRM*, Gartner Group report, April 16, 2001, engagement No. 220053130). "SRM starts with collaborative design and a willingness to share intellectual capital and access to common applications and information with suppliers." Thus, SRM is implemented in a manner reminiscent of integrated product teams with participants from the enterprise and its supplies sharing a common end—more competitive end-customer service. Some Japanese firms implement Shukko, a method of loaning experts and executives to suppliers. Further, "SRM increases an enterprises ability to optimize supplier relationships to produce superior customer solutions and drive revenue generation and profitability.

Gartner believes that by 2005 enterprises will move strongly to SRM methodologies or they will see profit reductions of close to 2 percent." This is more understandable when one considers that the weakest link in the chain determines the strength of the chain. SRM includes focusing resources to improve the chain as a whole. Per the dictum of systems

engineering, optimizing the parts, de-optimizes the whole; optimizing the whole, de-optimizes the parts. Thus, an enterprise-systems perspective of the entire supply chain can greatly enhance its overall competitiveness.

Among organizations, such role taking involves boundary spanning or overlap—for example, through short-term visits, long-term transfers (known in Japan as *shukko*), or stable interorganizational teams. Like on-the-job training for individuals (pervasive in Japan as a mode of socializing newcomers in a corporate culture), it is interorganizational “learning by doing.” The people of each firm immerse themselves in the routines of the other, thereby gaining access to the partner’s stock of tacit knowledge. A clear benefit is that learning takes place without the need first to convert tacit knowledge to explicit knowledge. This saves time and resources and better preserves the original knowledge base. (James R. Lincoln, Christina L. Ahmadjian, and Eliot Mason, “Organizational Learning and Purchase-Supply Relations in Japan: Hitachi, Matsushita, and Toyota Compared,” *California Management Review*, Berkeley, CA, Spring 1998, Vol. 40, Issue 3, pp. 241–264.)

Symmetric Cryptography—see Asymmetric Cryptography and Encryption

Single-key method of encrypting and decrypting text, such as the data encryption standard; also called conventional cryptography. The problem with symmetric cryptography is that the participants must prearrange their transmission so that they both (or all) have the same secret key. Also, if several people share this key, the key is more vulnerable to compromise.

Tyger! Tyger! burning bright
In the forests of the night,
What immortal hand or eye
Could frame thy fearful symmetry?

What the hand dare seize the fire?
And what shoulder, and what art,
Could twist the sinews of thy heart?
And whey thy heart began to beat,
What dread Hand? and what dread feet? ...

(William Blake, 1757–1827, from “The Tyger,” from *Songs of Experience*, from *The Oxford Dictionary of Quotations*, Oxford University Press, New York, 1980, p. 87, No. 14.)

System

- 1) A regularly interacting or interdependent group of items forming a united whole.
- 2) A group of devices, artificial objects, or an organization forming a network, especially for distributing something or serving a common purpose.
- 3) An organized set of doctrines, ideas, or principles usually intended to explain the arrangement or working of a systematic whole [paradigm].
- 4) A manner of classifying, symbolizing, or schematizing—for example, a taxonomy (Webster’s *New Collegiate Dictionary*, 1976).

Abundance of knowledge does not teach a man to be wise. (Heraclitus, quoted by Jacob M. Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall Inc., Englewood Cliffs, NJ, June 1961, p. 465.)

System Administration, Networking and Security (SANS) Organization—see International Information Systems Security Certification Consortium (ISC²) and National Security Telecommunications and Information Systems Security Instruction (NSTISSI)

An organization that has established a computer security certification program called the System Network Assurance Program (SNAP), consisting of a standard series of briefings, courses, and tasks for demonstrating technical knowledge (<http://www.sans.org/aboutsans.php>) (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

18. Past experience is excellent for providing a reality check. Too much reality can doom an otherwise worthwhile design, though. (David Akin, professor, University of Maryland, "Akin's Laws of Spacecraft Design" [received via Internet e-mail] and confirmed by Dr. Akin dakin@umd.edu or DAKIN@SSL.UMD.EDU. See http://spacecraft.ssl.umd.edu/academics/akins_laws.html.)

Systematic Sampling

A sampling interval determined by dividing the desired sample size (n) into the number of elements in the accessible population (N) (i.e., N divided by n) and then drawing the first element at random from the first sampling interval. Thereafter, every element at the next sampling interval is included in the sample (IRMC Measuring Results of Organizational Performance Course).

I have traveled the length and breadth of this country and talked with the best people, and I can assure you that data processing is a fad that won't last out the year. (The editor in charge of business books for Prentice Hall, Inc., 1957 [received by author via Internet e-mail and verified in Christopher Cerf and Victor Navasky, *The Experts Speak*, Villard, NY, 1984, p. 230].)

Systems Analysis

The act, process, or profession of studying an activity (as a procedure, business, or physiological function) typically by mathematical means in order to define its goals or purposes and to discover operations and procedures for accomplishing them most efficiently (*Webster's New Collegiate Dictionary*, 1976, p. 1174).

To this day, we screw in light bulbs because one of Edison's lab assistants saw the similarity between problems keeping the newly developed light bulbs in their sockets and the screw top cap of a kerosene can. As mentioned earlier, inflatable splints and medical IV bags are not obvious places to look when searching for solutions to a basketball shoe problem, yet the engineers at Design Continuum recognized nonobvious similarities that led to the development of the Reebok Pump shoe. (Andrew B. Hargadon, "Firms as Knowledge Brokers: Lessons in Pursuing Continuous Innovation," *California Management Review*, Berkeley, CA, Spring 1998, Vol. 40, Issue 3, pp. 209–227.)

Systems Architecture (SA)—see Architecture, Operational Architecture, Technical Architecture

The physical connection, location, and identification of: key nodes, circuits, networks, war-fighting platforms, etc., and the specification of system and component performance parameters. It is constructed to satisfy operational architecture requirements per

standards defined in the technical architecture. The SA shows how multiple systems within a subject area link or interoperate and may describe the internal construction or operations of particular systems within the architecture. Its primary purpose is to enable or automate operational activities through physical processes. The SA identifies system interfaces and defines connectivity between systems. An SA maps platforms, functions, characteristics, data elements onto the operational architecture—connecting the means to the ends. It also defines systems constraints and the boundaries of system performance. An SA is technology-dependent, but supports multiple command organizations and missions, but should not be based on current organizational models, force structures, or fielded technologies (IRMC Advanced Software Acquisition Management Course).

Third, a common tendency to firmly segregate knowledge users (“decision makers”) from many of those involved in generating knowledge further serves to separate knowledge from its potential uses. The universal use of the term “knowledge worker,” as distinct from workers who presumably don’t have or use knowledge, is a prime indicator of how common this sort of error is. A recent survey by Mark Fruin on how knowledge is understood and valued at Toshiba points out the fatuousness of these labels.³³ (Liam Fahey and Laurence Prusak, “The Eleven Deadliest Sins of Knowledge Management,” *California Management Review*, Berkeley, CA, Spring 1998, volume 40, Issue 3, pp. 265–276.)

Systems Engineering—see Systems Management and Systems Thinking

Systems engineering is an engineering discipline or specialty that address systems or networks of subsystems or components. The processes occurring within such sub-systems are completely ignored by systems engineers (but a major concern to design engineers). Systems engineers refer them to as “black boxes” because they are considered to be opaque—the systems engineer cannot see what is going on within the black box. However, the systems engineer is greatly concerned with the inputs and outputs of black boxes. Thus, systems engineers are concerned with designing systems and networks. They are the architects of the electronic world. In the government, systems engineers are frequently a select subset of electronics engineers (job series 0855) or general engineers (job series 0801)—especially in the world of IT. Systems engineers are also concerned with overall systems performance—outcome measures as well as overarching considerations. The latter are formulated into technical disciplines (formerly addressed in MIL-STD-499) that include: safety, configuration management, test and evaluation, and electronic emissions. Project engineers and managers should be well versed in systems engineering. It is a major curriculum in the capstone course for program managers (for level 3, advanced, certification under the Defense Acquisition Workforce Improvement Act, DAWIA), PMT302 (also called the Advanced Program Managers Course or APMC) at the Defense Systems Management College (DSMC) of the Defense Acquisition University (DAU) in Ft. Belvoir, VA. Systems engineers should use systems thinking without thinking. For information on the U.S. Air Force Systems Engineering Procedures (SEP), see <http://Web1.ssg.gunter.af.mil/> (IRMC Advanced Information System Acquisition Course).

SPAWAR Chief Engineer:

<https://skc.spawar.navy.mil/skctoday.nsf/skctoday?readform>

Engineering and Public Policy (including the program in International Peace and Security): <http://www.epp.cmu.edu/>

INCOSE, International Council on Systems Engineering, Washington Metropolitan Area Chapter (WMA) Web Page: <http://www.incose-wma.org/info/> General INCOSE Info: 800-366-1164;

INCOSE Web page: <http://www.incose.org> wmackey@csc.com 301-921-3082.

Deputy Director, Systems Engineering: <http://www.acq.osd.mil/io/se/index.htm>

American Society of Naval Engineers: <http://www.navalengineers.org/> 703-836-6727; FAX= 703-836-7491, ASNEHQ@NAVALENGINEERS.ORG.

Any competent scientist can think logically. The great ones use intuition. (Isaac Asimov, "A Problem of Numbers," *The Best Mysteries of Isaac Asimov*, Fawcett Gold Medal Books, New York, 1986.)

Systems Integration/Integrator

An entity that integrates or combines various components to form a complete, functional system to meet overall and specific system requirements (outcomes). Systems integration can be done by the government or a contractor, but each system must have a systems integrator to succeed. Government offices sometimes (virtually never successfully) serve as de facto systems integrators. It is necessary to designate a systems integrator in order to focus responsibility and accountability for systems performance. Generally, the prime contractor will perform systems integration, integrating the contributions of various subcontractors and vendors. The systems integrator will normally perform program or project management functions including: make or buy decisions, systems engineering, systems test and evaluation, training, subcontract management, architectural design, financial management, logistical analysis, and risk management and analysis. Many systems integrators and prime contractors propose to perform a significant portion of the design engineering and software development, but not all contractors have quality track records in these areas (especially software). The government now requires that bid evaluations include historical performance factors for such reasons. It is not necessary for the systems integrator to produce the majority of the components/assemblies of the system. They should, however, excel in systems engineering and systems management (IRMC Advanced Information System Acquisition Course).

Maturity is also characterized by high-level ambiguity tolerance ... A mature person has an enormous ambiguity tolerance. (Lee Roloff, audiotape from C. G. Jung Institute of Chicago.)

Systems Management

The management of systems that entails the application of systems engineering principles and systems thinking. "Because a system is a whole that cannot be divided into independent parts, its performance is never equal to the sum of the actions of its parts taken separately; it is a function of their interactions. It can be shown that when each part of a system taken separately is made to perform as well as possible, the system as a whole cannot perform as well as possible (Sengupta and Ackoff, "Systems Theory from an

Operations Research Point of View," *General Systems*, Vol. 10, pp. 43-48). "Therefore, effective system management must focus on the interaction of its parts rather than on their actions taken separately ... [since] it has been estimated that at least 90 percent of today's workers can do their jobs better than their bosses can ... today's manager has three principal functions ... to create an environment in which our subordinates can do as well as they know how ... develop those for whom they are responsible ... [and] manage the interactions of those for and to whom they are responsible" their units with other units and their organization with other organizations (Russell Ackoff, "Systems Thinking and Thinking Systems," *Systems Dynamics Review*, 1994, Vol. 10, No. 2-3, Summer-Fall, pp. 175-88) (IRMC Leadership for the 21st Century Course). System managers include: system security administrator (SSA), system administrator (SA), and network security officer (NSO) (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

I wrote somewhere once that the third-rate mind was only happy when it was thinking with the majority, the second-rate mind was only happy when it was thinking with the minority, and the first-rate mind was only happy when it was thinking. (A. A. Milne, *War and Humor*, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 236.)

System Security Authorization Agreement (SSAA)

The primary document required for system security accreditation under the defense information technology security certification and accreditation process (DITSCAP). It is an agreement among the designated approval authority (DAA), certification authority (CA), user, and program manager. The site SSAA should include appendices for each system or application included in it (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

17. The fact that an analysis appears in print has no relationship to the likelihood of its being correct. (David Akin, professor, University of Maryland, "Akin's Laws of Spacecraft Design" [received via Internet e-mail] and confirmed by Dr. Akin dakin@umd.edu or DAKIN@SSL.UMD.EDU. See http://spacecraft.ssl.umd.edu/academics/akins_laws.html.)

System Software

Software that controls basic operations of the computer including what programs are running and which physical areas of the computer may be accessed. System software must be protected from unauthorized access (should be limited, controlled, and monitored). It includes: operating system software (DOS or Windows), system utilities, program library system, file maintenance software, security software, data communications system, and database management systems. Vulnerabilities include: remote access to system master console via dial-in, vendor supplied logons for maintenance or setup, vendor access packages, and system interfaces for communications or security (IRMC Developing Enterprise Security Strategies, Guidelines, and Policies Course).

The NIH Syndrome: Not Invented Here.

System Support Office (SSO)

SSOs do the actual programming of applications located in Defense Information System Agency MegaCenters (*Glossary of IM/IT & KM Terms*).

640K ought to be enough for anybody. (Attributed to Bill Gates, Founder and Chief Executive Officer of Microsoft, 1981 [received via Internet e-mail and quoted by Christopher Cerf and Victor Navasky in *The Experts Speak*, Villard, NY, 1984, p. 231].)

Systems Thinking—see Systems Engineering; *Fifth Discipline Fieldbook for Educators, Parents, and Everyone Who Cares About Education* <http://www.fieldbook.com>

An approach for managing complexity by helping decision-makers understand the cause-and-effect relationships with knowledge, information, and data. It identifies types (or patterns) that occur repetitively in decision-making. Systems thinking expands individual thinking perspectives and improves individual and organizational decision-making (*Glossary of IM/IT & KM Terms*). Peter Senge's *Fifth Discipline* is a classic work in systems thinking. The Department of the Navy Chief Information Officer also has a CD on systems thinking, but it is only available to authorized personnel (e.g., government workers) due to copyright restrictions. IRMC's Leadership for the 21st Century Course defines it as "an approach that seeks to explain the behavior of the whole by examining the relationships among the parts as they affect the whole." The building blocks of systems thinking involve understanding feedback, including: the reinforcing process of vicious and virtuous circles of causation and small changes that grow (à la Gladwell's *Tipping Point*), balancing process with implicit sources of stability and resistance and underlying goal-directed behavior, and delays and interruptions between actions and consequences (IRMC Leadership for the 21st Century Course).

Imagination is the highest kite one can fly. (Lauren Bacall, quoted by Noah ben Shea in *Great Jewish Quotes*, Ballantine, New York, 1993.)

T

Tacit Knowledge

Personal “know-how” that is difficult to articulate because it is derived from individual experience and beliefs. Tacit knowledge is implicit in how one performs on the job. Assisted by the Department of the Navy (DON) Chief Information Officer KM team, the SPAWAR Systems Center Charleston (SSC-CH) pursued tacit knowledge through its KM pilot initiative. SSC-CH videotaped structured interviews with knowledgeable personnel in order to capture tacit knowledge in a particular domain. The resulting videos were edited in order to create short, pithy knowledge nuggets for indexing and storage into a knowledge repository available for employee viewing. Employees are encouraged to access and absorb knowledge from this knowledge base in order to complete the tacit knowledge transfer (TNT) process. This technique can be replicated to add additional domains and to port it to other DON activities. However, the contents of the present repository may be considered proprietary.

It is merely the bias of most modern scholars to think that something does not exist unless it is written down in some text. (John Myrdhin Reynolds, *The Golden Letters*, Snow Lion Publications, Ithaca, NY, 1996, p. 203.)

Tacit Knowledge Transfer (TNT)

This term implies the complete cycle of capturing, storing, distributing, and re-using tacit knowledge (i.e., tacit KM). It builds upon tacit knowledge capture but also emphasizes social and human considerations essential to motivating the successful re-use of tacit knowledge. A large knowledge base is worthless if never utilized. The present brain drain (formerly predicted by the Hudson Report, *Workforce 2000*) has highlighted the need for advances in TNT. It is a major challenge for knowledge workers and managers. Since this challenge is shared across the government, successful techniques and processes that address TNT would have great effect overall and have a high potential for cost-effectiveness.

Thoughts unexpressed may sometimes fall back dead; but God himself can't kill them when they're said. (Will Carlton, *The First Settler's Story*, 1895-1912, st. 21, from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 123.)

Target/Threshold

A particular value is derived analytically or intuitively that states either (1) some desired ultimate value or (2) a minimally acceptable value of the measure that will enable the organization to be successful (IRMC Measuring Results of Organizational Performance Course). This is a technique to determine if an intervention or initiative has succeeded or not. It is an alternative to use of a baseline or benchmark. The standard (target or threshold) chosen can be more realistic regarding an organization's starting point (e.g., an industry benchmark may simply be unreachable in the short term so a threshold or target is established on a path towards meeting the external benchmark) or more tailored to its needs (if an external benchmark doesn't apply to an organization as a

special case—not resembling other entities in their industry or field closely enough for a good comparison).

When Diogenes was very old, his friends urged him to ease up and rest. “What?” roared Diogenes. “If I were running in a stadium ought I to slacken the pace when approaching the goal? Ought I not rather to put on speed?” quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 275.)

Taxonomy—see Knowledge Management Taxonomy

A consistent, scientific classification schema and its resulting catalog, used to provide a conceptual framework for discussion, analysis, or information or knowledge retrieval. A good taxonomy should separate elements of a group into subgroups that are mutually exclusive, homogeneous, unambiguous, and (taken together) include all possibilities. It should also be simple, easy to remember, and easy to use (adapted from *Glossary of IM/IT & KM Terms*). Taxonomies are hierarchical in nature and usually arranged in clustered formats similar to outlines or tables of contents. The Dewey decimal system is an example of a taxonomy of knowledge. There are alternative schemas such as indexing, as well as relational and object-oriented arrangements. The Department of the Navy Chief Information Officer is presently pursuing the creation of a standard “enterprise knowledge management” taxonomy that will be published upon completion and available to the public.

Prejudice is hardening of the categories. (Charlie Sproull, PMA264, NAVAIR, March 23, 1982.)

Technical Architecture (TA)—see Architecture, Operational Architecture, Systems Architecture

The joint technical architecture (JTA), while entitled “architecture,” is now referred to as a “view” of the Department of Defense (DoD) IT architecture. DoD’s technical architecture framework for information management (TAFIM) was the predecessor to JTA. See *Architecture Concepts and Design Guidance (TAFIM)* (DoD, 1994, Vol. 3, version 20, June). The TA identifies the services, interfaces, standards, and their relationships. It provides the technical guidelines for implementation of systems upon which engineering specifications are based, common building blocks are built, and product lines are developed. The purpose of the TA is to define the set of rules that govern systems implementation and operation. The TA is strongly influenced by operational architecture requirements; analyses of possible enabling technologies; information systems paradigms of processing, databases, and communications; definitions and corresponding technical criteria for system capabilities, services, and interfaces; new technologies, emerging standards, and phase-out of old technologies. They account for multi-platform and network interconnection requirements among all systems that produce, use, or exchange information electronically. TA rules are defined in terms of nonproprietary specifications, reducing reliance on proprietary technologies (IRMC Advanced Software Acquisition Management Course).

Managing your problems can only make you good, whereas building your opportunities is the only way to become great. (Jim Collins, *Good to Great*, Harper Business, New York, 2001, p. 59.)

Technology Assessment

One of the 10 federal chief information officer (CIO) competencies, specified by the Federal CIO Council Executive Board, included in the IRMC's curriculum for the CIO certificate (IRMC New World of the CIO Course). <http://www.ndu.edu/irmc/>.

<http://www.wws.princeton.edu/~ota/>

<http://www.attunetechnology.com/assessment.asp>

<http://www.icta.org/>

<http://tap.gallaudet.edu/>.

We who look at distances in microns and lightyears need to be freed from handbreadths and cubits. (Schacter-Shalomi, *Paradigm Shift*, Aronson, Northvale, NJ, 1993, p. 270.)

Telecommunications Act of 1996, P. L. 104-104 2/8/96—see Communications Decency Act (CDA)

The Telecommunications Act of 1996 is also called the CDA. It promotes private sector deployment of IT and telecommunications through competition and deregulation. Its Title V on obscenity and violence incited much litigation (and its other title). It also addresses telemedicine, military readiness, and personnel morale (IRMC Assuring the Information Infrastructure Course). Telecommunications in general: <http://www.iw.com> *Internet World*; *TechWeb* magazine <http://www.techweb.com>; <http://www.gopher.com> to use gopher via browser; <http://www.shareware.com>; http://www.telecomdirect.pwcglobal.com/telecom/direct:TIH/Telecom_Technology/Networks_And_Operations/NandOArt:telecom/print.jsp:/DocRep/telecom/TelecomTechnology/NetworksOperations/0000000705.?&dp=PWC.GENERALINFO.TITLE:Opening+the+Loop; and http://www.telecomdirect.pwcglobal.com/telecom/direct:TIH/Telecom_Management/Policy_And_Analysis/PolyAnaArt:telecom/print.jsp:/DocRep/telecom/TelecomManagement/PolicyAnalysis/0000001182.?&dp=PWC.GENERALINFO.TITLE:US+Telecom+Industry+Reacts+to+Passage+of+Tauzin%2dDingell+Bill+in+House discussion and mailing lists (IRMC Critical Information Systems Technologies Course).

Politics is far more complicated than physics. (Albert Einstein, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 383.)

Telecommuting

The process whereby employees work from afar via computers, faxes, and video teleconferencing rather than physically at their places of employment. The government, for instance, has instituted programs in the Washington, DC, area for employees to telecommute one or two days per week to reduce traffic congestion on the highways. Telecommuting can be performed at regional sites (with shorter commutes for some

workers) per the government's program or from home per some industry programs. Employees and contractors who perform routine work outside the traditional office setting, generally in fixed, structured locations such as satellite office suites, customer or partner premises, or employee homes. It can be part time (certain days per week), full time (whole week except for meetings held at the office in person), day-extender (works at office, but logs in from home after hours), or road warrior (works on the road at varying locations—such as traveling salespersons, couriers, and insurance claims adjusters) (IRMC Assuring the Information Infrastructure Course).

The brain is a wonderful organ. It starts working the moment you get up in the morning and does not stop until you get to the office. (Robert Frost, quoted by Dave Hemsath, *301 Ways to Have Fun at Work*, Berritt-Koehler Publications, San Francisco, 1997, p. 6.)

Telephony

The technology associated with the electronic transmission of voice, fax, or other information between distant parties using systems historically associated with the telephone. With the arrival of computers and the transmittal of digital information over telephone systems and the use of radio to transmit telephone signals, the distinction between *telephony* and *telecommunication* has become difficult to make (*Glossary of IM/IT & KM Terms*).

Bore: a person who talks when you want him to listen. (Ambrose Bierce, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 13.)

Test/Retest Reliability

A technique for estimating instrument reliability in which scores are compared from two separate administrations of the same instrument to the same group at different times (IRMC Measuring Results of Organizational Performance Course).

There is only one person with whom you can profitably compare yourself, and this person is your yesterday self. (Jacob Braude, *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall, Inc., Englewood Cliffs, NJ, June 1961, p. 354.)

Thick (or Fat) and Thin Clients

In client/server applications, a thin-client (personal computer, terminal, or workstation) has little internal computing power or memory. Thus, the server (or mainframe computer) does the bulk of the data processing. The computer industry is divided into two camps: Netscape and Sun Microsystems advocating Java-based thin clients running on network computers, versus Microsoft and Intel pushing ever-larger applications running locally on powerful, thick-client desktop computers. The present situation is merely another cycle of computer development. Formerly, dumb terminals were serviced by large mainframe computers to create multi-user systems. As personal computers developed more computing power and memory for lower cost, distributed processing on powerful small units evolved. Now that telecommunications has improved and server farms have been implemented, cheaper thin-client terminals have become competitive with thick clients (except for laptops or notebooks dependent upon dial-up

connections). Costs are already being saved by licensing software applications centrally and loading terminals, as needed, from local area network servers. It is not a large jump from there to thin-clients. Furthermore, the advent of hand-held devices (e.g., personal digital assistants) has created a need for smaller versions of popular applications that can run, and be adequately controlled and displayed, on these small devices. It is not inconceivable that a sine wave-like cycle may become apparent for thin and thick client implementations or architectures.

Get your feet off my desk, get out of here, you stink, and we're not going to buy your product. (Joe Keenan, President of Atari, responding to Steve Jobs' offer to sell him rights to the new personal computer he and Steve Wozniak had developed, 1976, quoted by Christopher Cerf and Victor Navasky in *The Experts Speak*, Villard, NY, 1984, p. 231.)

Threat Analysis

Consists of: Threat identification (highlight and define threats to system), vulnerability analysis (identify vulnerabilities to the system and estimate their potential for exploitation), correlation of vulnerabilities and threats (determine risk), and risk assessment (weigh events, relative impacts, estimate likelihood, rank acceptability, identify and evaluate) (IRMC Advanced Software Acquisition Management Course).

Strong and bitter words indicate a weak cause. (Victor Hugo, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall Inc., Englewood Cliffs, NJ, June 1961, p. 60.)

Threats to Acceptance (of Evaluation Results)—see Rater (Errors)

Various conditions and arguments are sometimes used to challenge the validity of experimental conclusions. These include: convenience sampling, face validity, Hawthorne effect, judgment sampling, maturation, pretest sensitization, selection interaction, and statistical regression. Factor analysis (e.g., ANOVA) can be helpful in addressing these threats after the fact, but good experimental design can help preclude them.

To err is human, but when the eraser wears out ahead of the pencil, you're overdoing it. (J. Jenkins, quoted by Lawrence J. Peter in *The Peter Prescription*, William Morrow, New York, 1972, p. 9.)

Thurstone Scale

A scale composed of a series of statements having a different degree of attitudinal intensity as indicated by unseen intensity weights. Respondents endorse those statements with which they agree (IRMC Measuring Results of Organizational Performance Course).

In heaven an angel is nobody in particular. (George Bernard Shaw, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 220.)

Time Dependency

A form of rater error in which raters gives a subject a rating on the basis of either their first impression (not what came afterward) or on their most recent accomplishment (not what they did before) (IRMC Measuring Results of Organizational Performance Course). This is an unfair rating system that places weights inappropriately and nonstatistically.

The most important time to help someone is when they need it. (Dave Marinaccio, *All I Really Need to Know I Learned from Watching Star Trek*, Crown Publishing, New York, 1994, p. 8.)

Time Horizon—see Activation Theory and Helicopter Principle

The longest interval that a particular person has or can have from the start to the finish of a project. It is closely connected to one's level of abstraction. Elliot Jaques asserts that it is a natural ability of talent inherent in individuals, but that the demonstrated level increases predictably with chronological age. This is a similar relationship that the intelligence quotient (IQ) has to mental and chronological age. Further, Jaques states that one's presently demonstrated time horizon should correlate with one's hierarchical position within the enterprise. It thus correlates well with systems thinking. This position complements Jim Collins³⁴ emphasis upon placing the right people in the right jobs.

At any particular point in people's careers there is a maximum time-span at which any given person can work. If people are employed at levels of work below that maximum time-span they feel their capabilities are being underutilized, and they experience boredom and frustration. If people are employed at levels of work above that maximum time-span, they become disorganized and anxious and are unable to cope. If people are fortunate enough to be employed at levels of work that coincide with the maximum time-spans which they are capable of achieving, then they feel comfortably employed, and so long as their work is of interest and they have the appropriate knowledge, skill, and temperament, they will derive satisfaction from that work. It is this maximum time-span at which a person is able to work at a given point in time that I referred to above as that person's time-horizon. This time frame gives a measure of a person's cognitive power and ability to handle conceptual complexity at that time. The temporal-horizon sets the limits of the world of purpose and intention which people can construct and pattern, and within which they live and organize their active lives and aspirations. (Elliott Jaques, *Creativity and Work*, International Universities Press Inc., Madison, CT, 1990, pp. 102–103.)

To be required to work below one's time-horizon is frustrating, de-motivating, soul-destroying ... The longer the time-horizon of the student, the longer there should be the opportunity to continue with "purely academic" study. (*Ibid.*, p. 122.)

... the unexpected finding that people at the same time-span felt entitled to by and large the same pay; the longer the time-span the higher the payment to which they feel entitled. (*Ibid.*, p. 252.)

Reward for performance and promote on ability ... promotion should depend on people's ability to do the job to which they're being promoted, and it has little to do with their performance in the job they have now. Have a results review *and* a development/performance review separately. Promotion is *not* a reward. Rewards can be split between individual and team (e.g., 50 percent each) or *all* go to team. (Michael Hammer and James Champy, *Reengineering the Corporation*, Harper Business, New York, 1993, pp. 186–189.)

Tolerable Error—see Statistical Significance

The largest amount of error in the average score of a sample of cases that would be acceptable for an evaluation (IRMC Measuring Results of Organizational Performance Course).

Those who throughout life make no mistakes almost certainly make nothing else. (Chris R. Warnken, "It's Hard to Say," *Rosicrucian Digest*, 1975, Vol. LIII, No. 9, p. 15.)

Total Cost of Ownership (TCO) or Total Ownership Cost (TOC)

TCO or TOC are the current terms for life-cycle cost (LCC). For example, in acquisition, the program management office has, in the past, prepared a program manager's life-cycle cost estimate (PMLCCE). In addition, a central specialty body (differing upon the size of the program) prepared an independent estimate (formerly called an independent cost estimate or ICE). The thrust of these efforts is to provide a costing for an entire program over its complete life. This estimate includes: research and development, procurement, maintenance, disposal, and any other relevant costs. Of course, costs must be escalation factors so that the TOC can be quoted in real dollars (generally charts for both present year and then year dollars are provided). TOC provides a better basis of comparison for Department of Defense investment in new systems, equipment, etc. Costs can be compared in terms of present values. Use of TOC is valuable to IT capital planning and investment, a federal chief information officer competency.

See <http://www.pmcop.dau.mil/>, Program Managers CoP site and Naval Sea Systems Command site <http://www.navsea.navy.mil/sea017/> <https://skc.spawar.navy.mil/skctoday.nsf/skctoday?readform>.

"If you want truth," Nasrudin told a group of Seekers who had come to hear his teachings, "you will have to pay for it." "But why should we have to pay for something like truth?" asked one of the company. "Have you not noticed," said Nasrudin, "that it is the scarcity of a thing which determines its value?" (Idries Shah, *The Pleasantries of the Incredible Mulla Nasrudin*, Octagon Press, London, 1968, p. 68.)

Transmission Control Protocol (TCP)

The protocol that provides application programs with access to a connection-oriented communication service. TCP offers reliable, flow-controlled delivery. More important TCP accommodates changing conditions in the Internet by adapting its retransmission scheme (*Glossary of IM/IT & KM Terms*). TCP is frequently paired with Internet protocol (IP) to create TCP/IP, the basic support to Internet/e-mail use.

TCP/IP Layers^a

TCP/IP Layer	Description
Application	When a user initiates data transfer, this layer passes the request to the transport layer.
Transport	This layer attaches a header and passes the data to the network layer.
Network	Source and destination IP addresses are added for routing purposes.
Data link	Performs error checking over flow of data between the previous layers and physical layer.
Physical	Moves data into or out of physical media (e.g., Ethernet, PPP, coax, etc.).

a. From IRMC Assuring the Information Infrastructure Course.

[When asked the time] You mean now? (Yogi Berra, *The Yogi Book*, Workman Publications, New York, 1998, p. 33.)

Trojan Horse

A program performing services beyond those stated in its specifications, which may contain functions that allow unauthorized collection, falsification, or destruction of data. They can be found in any type of file that can be downloaded by users, but they are typically found in freeware such as games, MP3 songs, screensavers, etc. They are usually downloaded via HTTP or FTP (via the Internet). Hackers often employ Trojan horses to grab passwords.

It has been said that public speakers fall into three categories: those who lay each page of their speech on the table in front of them as they finish, so the audience can see how much is left; those who confuse the audience by putting a completed sheet under the others they are holding; and worst of all, those who appear to be playing honest by placing the sheets in front of them, then horrify the audience by picking up the whole batch and beginning to read from the other side. (Jacob Braude, *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall Inc., Englewood Cliffs, NJ, June 1961, p. 8.)

Trusted Computing System Evaluation Criteria (TCSEC)—see Orange Book

We can lick gravity, but sometimes the paperwork is overwhelming. (Wernher von Braun, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 438.)

t Test

A statistical technique that can determine whether one group of numerical scores is statistically higher or lower than another group of scores (IRMC Measuring Results of Organizational Performance Course).

Aristotle maintained that women have fewer teeth than men, although he was twice married, it never occurred to him to verify this statement by examining his wife's mouths. He said also that children would be healthier if conceived when the wind is in the north. One gathers that the two Mrs. Aristotles both had to run out and look at the weathercock every evening before going to bed. (Bertrand Russell, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 341.)

Tunneling

Use of launching applications by ordinary users to circumvent firewall protocols by disguising incoming and outgoing traffic as hypertext transfer protocol. With tunneling, users can access Napster and Gnutella, retrieve e-mail from Hotmail accounts, and download prohibited materials from restricted Web sites. It also creates an opening for malware to enter the network.

The Ostrich Syndrome: Stick your head in the sand and maybe it will go away.

U

Unified Modeling Language (UML)—see IDEF1X

A language for specifying, constructing, visualizing, and documenting the artifacts of a software-intensive system. In an elaborative approach, developers create models, add details, and evolve the model into the actual system. See <http://www.omg.org> (IRMC Advanced Information System Acquisition Course).

If someone uses a finger to point out the moon to another person, if that person takes the finger to be the moon, he will not only fail to see the moon, but he will also fail to see the finger. (Buddha, *The Surangama Sutra*, Taisho 945.)

Uniform Computer Information Transactions Act (UCITA)

Recognizes software licenses (rather than sold) to consumers and protects the licensors. Recognizes “clickwrap” agreements; establishes uniform law respecting electronic signatures and authentication; recognizes action of electronic agents (IRMC Advanced Information System Acquisition Course).

There is, however, a limit at which forbearance ceases to be a virtue. (Edmund Burke, 1727–97, *Observations on a Publication*, “The Present State of the Nation,” 1769, from *The Oxford Dictionary of Quotations*, Oxford University Press, New York, 1980, p. 108, No. 13.)

Uniform Resource Locator (URL)

URL is the title of Internet addresses. Formerly they began with <http://> then <http://www> to indicate the World Wide Web was being addressed as opposed to gophers or FTP. Browsers will now usually add the <http> prefix automatically and some Web addresses do not include the [www](http) designation. URLs have a relatively fixed format using slashes to delineate sub-sites and periods to differentiate the type of object (e.g., <http://www.html>). Browsers also provide storage for favorite or much-used URL addresses. Many applications (e.g. MS Word and Excel) allow the user to click on a hyperlink (which has a URL that is underlined and in color, usually blue or red) to access its site. Alternately, the user can copy the URL to the clipboard and paste it into a browser. Care must be taken to avoid copying (e.g. leaving out the first or last letter) or pasting errors (including a grammatical mark such as a parenthesis). Either error will usually generate an error message in the browser.

The development of general ability for independent thinking and judgment should always be placed foremost, not the acquisition of special knowledge. (Albert Einstein, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 483.)

Uninterruptible Power Supply (UPS)

A power back-up system (usually relying on batteries) to prevent a system from crashing due to a power outage. UPSs are often included in continuity of operations plans and other system continuity or disaster recovery efforts.

It can be predicted with all security that in fifty years light will cost one fiftieth of its present price, and in all the big cities there will be no such thing as night. (J. B. S. Haldane, British scientist and author, quoted by Andre Maruois in *Le Figaro*, February 3, 1927 as quoted by Christopher Cerf and Victor Navasky in *The Experts Speak*, Villard, NY, 1984, p. 232.)

Something I learned long ago. It is not necessary to know what a person is afraid of. It is enough to know the person is afraid. (Lawrence Block, *The Sins of the Fathers*, Dark Harvest Arlington Heights, IL, 1976, p. 84.)

Unit of Analysis

The cases for which data is collected, recorded, analyzed, and reported. The horizontal rows in a database (IRMC Measuring Results of Organizational Performance Course).

Measurement inevitably means evaluating things by the standards of the past ... we cannot measure tomorrow when we don't know what it will involve. (Stephen Denning, *The Springboard*, Butterworth-Heinemann, Boston, 2001, pp. 189-190.)

Urban Legends—see Hoaxes and Myths

Stories which constitute modern folklore and are frequently transmitted over the Internet, generally by e-mail. Some relay wisdom and would qualify as teaching stories, others are strange, humorous, or just plain scary. Jan Harold Brunvald has written several books on them (e. g. *Curses! Broiled Again! The Hottest Urban Legends Going*, W. W. Norton & Co., NY, 1989) and refers to them as folklore or "Xeroxlore" (page 11). Most of them are completely imaginable, but some are based on or inspired by actual incidents or scenes in movies, television, etc. Often they refer to "a friend of a friend" or FOAF (see pp. 102 and 175). Typical examples include the "Little Buddy" type stories in which a child is said to be suffering from an incurable disease and wishes to receive post cards or e-mails from a lot of people (pp. 227-39). Sometimes small post offices can be overwhelmed with responses to these stories.

When received by e-mail they may be signed with the smile or two smile signs if the sender is not asserting their veracity (i. e. thinks it is a joke or story versus a legend which is asserted by the speaker or sender as true): a colon followed by a dash and then a close parenthesis. Indeed, Microsoft Word's autocorrect will translate this symbol into a smiley face automatically! (see p. 232 of *Curses! Broiled Again!* and p. 2 of Brunvand's *The Vanishing Hitchhiker—American Urban Legends and Their Meanings*, W. W. Norton, NY, 1981). Identification of them as urban legends is complicated by the process of polygenesis in which the retellers independently invent details which add apparent verisimilitude to the stories (*The Vanishing Hitchhiker*, page 33) as well as the development of regional "oikotypes" or versions (*The Vanishing Hitchhiker*, page 37), and communal recreation which includes normal storyteller modifications (p. 193). Such legends are also referred to as "Xeroxlore" (pp. 2 and 427) because people frequently Xerox copies to give to friends and co-workers.

Professor Brunvand solicits your urban legends. You can submit them directly to him: Professor Jan Harold Brunvand, Department of English, University of Utah, Salt Lake City, UT, 84112.

He has also published:

The Choking Doberman and Other "New" Urban Legends, W. W. Norton, NY, 1984.

The Mexican Pet—More "New" Urban Legends and Some Old Favorites, W. W. Norton, NY, 1986.

Too Good To Be True—The Colossal Book of Urban Legends, W. W. Norton, NY, 1999, and others.

There are also books by other writers such as:

Dale, Rodney, 1933-*It's True, It Happened To A Friend*: a collection of urban legends, London: Duckworth, 1984, as well as many other authors and books. You can search the Library of Congress Web site for Urban Legends to obtain an extensive list.
<http://catalog.loc.gov>.

There has also been at least one motion picture: *Urban legend*/a Neal H. Moritz/Gina Matthews production; Phoenix Pictures; directed by Jamie Blanks; produced by Neal H. Moritz, Gina Matthews, Michael McDonnell; screenplay, Silvio Horta. United States: TriStar Pictures, 1998.

And, a: Conference on Contemporary Legend (1982: University of Sheffield)
Perspectives on contemporary legend: proceedings of the Conference on Contemporary Legend, Sheffield, July 1982/edited by Paul Smith. Sheffield [South Yorkshire: Centre for English Cultural Tradition and Language, University of Sheffield, 1984.

There are also several Web sites such as: <http://www.urbanlegends.com/>
<http://www.delta-9.com/net47/myth/>
<http://www.snopes2.com/spoons/spoons.htm>
<http://www.ulrc.com.au/>
(see hoaxes above for more).

6. (Mar's Law): Everything is linear if plotted log-log with a fat magic marker. (David Akin, professor at the University of Maryland, "Akin's Laws of Spacecraft Design" Dr. Akin dakin@umd.edu or DAKIN@SSL.UMD.EDU. See http://spacecraft.ssl.umd.edu/academics/akins_laws.html.)

Usenet

Usenet groups are more commonly known as "newsgroups." There are thousands of groups hosted on hundreds of servers around the world, dealing with various topics. Newsreader software is required to properly download and view "articles" in the groups, but you can usually "post" an article to a group simply by e-mailing it (*Glossary of IM/IT & KM Terms*).

News and current events: <http://www.dtic.mil/dtic/digest/digest2001-3/>
Search Usenet database: <http://usenet-addresses.mit.edu/>
Usenet FAQs: <http://www.faqs.org/faqs/>

Infocenter Launch Pad: <http://www.ibiblio.org/usenet-i/>
Usenet history: <http://www.vrx.net/usenet/history/>.

News is the process of making not very much out of practically nothing. (John D. MacDonald, *One More Sunday*, Knopf, New York, 1984, p. 202.)

Utility Theory—see Asymmetrical Dominance and Decision Theory

A modification to the standard LaPlace approach to decision theory that compensates for asymmetric dominance—which causes people to value outcomes differently based upon the context (personal value, risk, etc.) versus the monetary value (expected value). Utility theory replaces numerical values (dollars) with the “utility” of particular outcomes to the decision makers.

Perhaps more than anything else, knowers do not evaluate items of knowledge independently, but as part of an overall context. Paying attention to the contextual properties of data in order to make sense of the world takes place not only at the basic sensory or perceptual levels (e.g., news that the temperature is 30 degrees in January has different meaning and would be valued differently depending on whether we are talking about San Diego or Minneapolis), but also with respect to higher-level cognitive activities. For example, an important piece of knowledge with significant marketing implications for the firm is the “utility” a consumer has for one product when compared with another. In expressing preference between two items, A and B, the overall set in which A and B are embedded (e.g., the presence of a third object C) may influence the relative rankings that an individual gives to A versus B. (Rashi Glazer, “Measuring the Knower: Towards a Theory of Knowledge Equity,” *California Management Review*, Berkeley, CA, Spring 1998, Vol. 40, Issue 3, pp. 175–194.)

Similarly, the maximin and minimax techniques either attempt to maximize the gain or minimize the loss, thus placing greater value or lesser value on the strict La Place expected values:

An important and frequently encountered type of context that knowers rely on is the way a particular situation is framed or a problem represented. As is true with context in general, framing considerations operate at the basic sensory or perceptual levels, but the more interesting cases involve higher order cognitive activities. Staying within the realm of preference judgments, for example, it has been shown that the negative properties of stimuli tend to be weighted more heavily than the positive ones. Consequently, whether a problem is framed in terms of gains or losses often has a dramatic effect on the interpretation or meaning given. Thus, if asked to decide between two “positive gambles”—A, where there is a 50 percent chance of winning \$1,000 (and 50 percent of winning nothing) or B, winning \$500 for certain—a typical respondent will choose B. On the other hand, if asked to decide between two “negative gambles”—C, where there is a 50 percent chance of losing \$1,000 (and 50 percent of losing nothing) and D, of losing \$500 for certain—the same respondent will choose C. Indeed, the pattern of results holds even when, for the “positive gambles,” the decision maker is given an endowment of \$1,000 to start and, for the “negative gambles,” an initial endowment of \$2,000—in which case, all four options are formally identical (leaving the individual with the same expected value of wealth of \$1,500). Nevertheless, despite the formal equivalence among the problems, knowers evaluate the two situations quite differently. (Rashi Glazer, “Measuring the Knower: Towards a Theory of Knowledge Equity,” *California Management Review*, Berkeley, CA, Spring 1998, Vol. 40, Issue 3, pp. 175–194.)

V

Validation

1) Process of applying specialized security test and evaluation procedures, tools, and equipment needed to establish acceptance for joint usage of an information system by one or more departments or agencies and their contractors (*Glossary of IM/IT & KM Terms*).

2) The process of determining if a proposed conclusion is appropriate to the means used to reach that conclusion. Validation does not determine if the conclusion is correct or not. Rather, the process of validation determines if the assumptions (implicit or explicit) are appropriate; the activities, data collection procedures, and techniques used were legitimate and properly orchestrated (e.g., experiments were double blind and results were statistically significant); and the conclusions follow logically from the results of the investigation or research. Validation implies reliability but reliability does not imply validation. Reliability is necessary, but not sufficient, for validation.

Ignorance defends itself savagely. (Ursula K. LeGuin, *Four Ways to Forgiveness*, Harper Prism, New York, 1995, p. 197.)

Validity—cf. Concurrent, Content-Oriented, Criterion-Referenced, Face, Predictive Validity, Sampling Validity

The characteristic of a measurement instrument that shows the degree to which it measures the specific factor it intends to measure (IRMC Measuring Results of Organizational Performance Course). It must be reliable to be valid. In a generic sense, validity does not prove truth, but only the acceptability of the methods used to reach a specific conclusion. It also depends upon the assumptions (and other tacit or implicit factors) used or held by the experimenters.

They simply refused to be confused by the facts. (Sydney Omar, *My World of Astrology*, Fleet Publishing, 1965, p. 48.)

Value-Added Network (VAN)

A network using the communication services of other commercial carriers, using hardware and software that permit enhanced telecommunications services to be offered. Historically, organizations using electronic data interchange (EDI) typically relied on specialized firms called VANs for technical assistance. Organizations now look to their VANs for assistance in using the Internet. VANs provide technical support; help desk and troubleshooting for EDI and telecommunications problems. They assist in configuration of software, upgrades to telecommunications connectivity, data and computer security, auditing and tracing of transactions, recovery of lost data, and service reliability and availability (*Glossary of IM/IT & KM Terms*).

Indeed, there is a real danger that KM will become discredited if it proceeds in ignorance of these large extant literatures, thereby creating unnecessary intellectual clutter and confusion. (David J. Teece, "Research Directions for Knowledge Management," *California Management Review*, Berkeley, CA, Spring 1998, Vol. 40, Issue 3, pp. 289–292.)

Vampire Tap

A vampire tap is a connection to a coaxial cable in which a hole is drilled through the outer shield of the cable so that a clamp can be connected to the inner conductor of the cable. A vampire tap is used to connect each device to thinnet coaxial cable in the bus topology of an Ethernet 10 base-t local area network (*Glossary of IM/IT & KM Terms*).

Once upon a midnight dreary,
while I pondered weak and weary,
Over many a quaint and curious volume
of forgotten lore,
While I nodded, nearly napping,
suddenly there came a tapping,
As of someone gently rapping,
rapping at my chamber door.

(Edgar Allan Poe, 1809–1849, *The Raven*, 1845, from *The Oxford Dictionary of Quotations*, Oxford University Press, New York, 1980, p. 375, No. 4.)

Verication (to Vericate)

To test the reasonableness by consulting a trusted ally; to determine the reasonableness or soundness, validation of information grounded by the implicit (*Glossary of IM/IT & KM Terms*). Mavens are optimal sources of verication that is based upon the epistemology of authority. However, there is a tendency for humans to be affected by the halo effect, in which a general view of another person's expertise is created when, in truth, that person is only knowledgeable in specific areas of knowledge (domains). A maven is not a "Renaissance man" knowledgeable about everything. Thus, verication is a risky technique unless carefully employed. Nevertheless, it is a very natural and quick one. If one considers the possible consequences of an incorrect answer sufficiently, verication can be cost-effective.

I am a democrat, but the idea that a gang of anybodies may override the opinion of one expert is preposterous nonsense. Only individuals think; gangs merely throb. (Robertson Davies, *The Papers of Samuel Marchbanks*, from *The Diary of Samuel Marchbanks*, Irwin Publishing, Toronto, 1985, p. 29.)

Video Privacy Protection Act (VPPA), 18 U.S.C. § 2710

This act prohibits videotape sale or rental companies from disclosing data about customers without consent or court order; it has civil penalties (IRMC Assuring the Information Infrastructure Course).

All the things I really like to do are either immoral, illegal, or fattening. (Alexander Woolcott, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 96.)

Video TeleConferencing (VTC)

VTC uses normal telephone lines to provide video (closed-circuit television) as well as audio (sound) and sometimes digital data also (thus full VVD can be made available). A single phone line provides 64 kbps, which is insufficient for VTC; a minimum of two lines

are used to provide 128 kbps. Additional video quality is available by adding bandwidth (more simultaneous phone lines), but quality depends on the lowest bandwidth user in a VTC connection. Proprietary software packages can improve quality without expanding bandwidth, but the users in a connection must have the same software package. If not, the standard package provides lesser picture quality. A single-point connection is created between two users. For a conference at more than two locations, a bridge unit is needed to create a multipoint conference. Normally, each user sees only one other user, but some specialized software can be used to create a split screen image (up to four other users can then be simultaneously viewed on one screen).

With proper equipment and software, users can simultaneously manipulate a shared file on computers attached to their VTCs. Use of VTC can reduce travel costs and risks, and save travel time. However, while a VTC is greatly superior to a telephone conference (one can view some expressions and hand movements, etc.), it is definitely inferior to a physical conference—as demonstrated in the NASA Challenger incident during which a conference failed to convey to attendees the full impact of the situation reputedly due to a lack of non-verbal communications cues. Full nonverbal and tonal clues are not available in a VTC. Thus, VTCs are very useful to replace travel between known persons (who might reduce travel from monthly to semi-annually, for instance), in order to reduce costs, while still maintaining personal contact. VTCs cannot provide the psychological and informal benefits, for instance, of shared meals and nonwork time spent together. This is especially important for international programs.

Men trust their ears less than their eyes. (Herodotus, Book I, Chapter 8, c. 485–425 B.C., from *Familiar Quotations* by John Bartlett, Little, Brown & Co., Boston, 1968, p. 86b.)

Virtual Collaboration

Two or more people working together (usually simultaneously, in real-time) at different physical locations. Application tools can enable a group of people to collaborate in real-time over the network using shared screens, shared whiteboards, and video conferencing. Collaboration can range from two people reviewing a slide set online to a conference of doctors at different locations sharing patient files and discussing treatment options. The Navy medical community, for instance, saved considerable travel funds as well as a great deal of stress on patients by creating a video teleconferencing link between their hospital in Hawaii and remote island facilities. Corpsmen on these small facilities could consult with specialists in the Pacific Fleet in real time, with the patient present on-site, but viewable in Hawaii. Virtual reality techniques can also be used to operate at a distance—actual physical collaboration via telemetry. Virtual collaboration is a major technique used by knowledge net workers. See <http://www.involv.net> for Web teams (IRMC Critical Information Systems Technologies Course).

<http://www.azla.org/2001/p026.html>

<http://www.fullcirc.com/community/vircollab.htm>

<http://www-fp.mcs.anl.gov/fl/accessgrid/tutorial-dec99-presentations/disztutorial-dec99/sld010.htm>

<http://pigtrail.uark.edu/news/1999/OCT99/small.html>.

Nothing is more destructive to inquiry and the knowledge inquiry brings than to carry about with one a standard way of how everything should be done ... there is no foreign custom, however absurd it may seem to us, that cannot be paralleled by a custom of our own. (Lord Dunsany, "Seeing the World," *The Ghosts of the Heavyside Layer*, Owlswick Press, Philadelphia, PA, 1980, p. 220.)

Virtual Integration

The process of incorporating extant legacy systems into a new, overarching system without physically merging the original systems or databases. In reality, the preexisting systems are made interoperable using middleware and input/output modifications (interfacing changes). However, the user interface is created so as to make system connections invisible to the user. Thus, it looks to the user like an integrated system, though it actually is not. In fact, the legacy applications are often hosted at far-flung locations and connected through the Internet or an intranet. Similar to software overlays, required programs, data, and information are often downloaded to the user interface as needed.

I swear, if jumping weren't allowed she'd never get to a conclusion. (Lawrence Block, *The Burglar Who Liked to Quote Kipling*, Dutton, NY, 1996, p. 180.)

Virtual Private Network (VPN)

A linkage and technique for improved security between remote sites. It's especially useful for mobile and telecommuter users. A remote user accesses the Internet service provider (ISP) through via dial-up (via local number or long distance toll-free number [800 or 888 area code]), digital subscriber line, interated services digital network, mobile Internet protocol, [no, regular internet service provider is insufficient] cable, etc. The organization connects to the same ISP. The ISP provides the secure linkage (VPN) connecting the two. (See Cisco VPN services site:

<http://www.cisco.com/warp/public/cc/so/neso/vpn/vpne/>
http://www.cisco.com/warp/public/732/Tech/unified_vpn/.

For remote-access VPN: When the service is client-initiated, security is provided via an encrypted tunnel using IPSec layer two Tunneling protocol (L2TP) or point-to-point tunneling protocol (PPTP). Client software is required. When the service is server-initiated, security is provided by a secure tunnel from the organization through the single ISP via L2TP or L2F. Clients connect to the ISP without the need for client software and the Internet is not used. The last mile to the client is not encrypted (from IRMC Managing Networked Security in a Networked Environment Course).

For Intranet access VPN: It links together specific domains within an organization (e.g., human resources, financial, logistics). It is useful in establishing a network for controlled, limited distribution information. While users share the same physical infrastructure, they are logically separated into VPN domains.

For extranet access VPN: The need for dedicated circuits is replaced by extending an intranet-like service to external organizations. This can help smaller, less resourced

partners. It can be limited, however, due to varying levels of trust and resulting security needs. Competing partners must be kept separated, for instance.

Generally, VPN does not require modification of legacy applications (as does public key infrastructure), is transparent to users, and can support multiple network services and protocols. It may, however, require client-based software, may exhibit some bugs in new software, and may not be interoperable between vendors. Of particular importance is the ISP's geographic coverage, scalability, quality of service, and network performance. Also, some providers subcontract to expand coverage and quality can vary for voice, video, and data.

There are many systemic dampers on innovation today. Hammer and Champy, for example, have referred to some of these: they assert that: When too many "'yes's' required, but only one 'no' there is a built-in innovation damper. They also allude to "diseconomies of scale" which occur due to overhead costs. Such situations indicate that there are optimal sizes for organizations. Situations are not, therefore, homogeneous. Tailoring (e.g. use of VPNs) can be necessary. (Michael Hammer and James Champy, *Reengineering the Corporation*, Harper Business, New York, 1993, p. 29.)

Well-informed people know it is impossible to transmit the voice over wires and that were it possible to do so, the thing would be of no practical value. (Editorial in the *Boston Post*, 1865, quoted by Christopher Cerf and Victor Navasky in *The Experts Speak*, Villard, NY, 1984, p. 227.)

The human animal needs a freedom seldom mentioned, freedom from intrusions. He needs a little privacy quite as much as he wants understanding or vitamins or exercise or praise. (Phyllis McGinley, quoted by Herbert V. Prochnow and Herbert V. Prochnow, Jr., in *The Toastmaster's Treasure Chest*, Harper & Row, NY, 1979, p. 230.)

Virtual Reality (VR)

Artificial worlds created on computers that simulate different realities. Many computer games create virtual worlds, but VR enables the user to step into and interact within the world. VR can help teach doctors how to perform surgery or even to actually perform it at a distance. In true VR, almost all the normal human senses are accommodated. The old 3-D movies were a step toward VR. Recent attempts to add olfactory inputs are another step. VR today generally addresses sight, sound, and kinesthetics (feel) and is progressing toward odors. Taste may be next. In the Serbian and Bosnian arenas, bombing runs were simulated by USAF pilots using PowerScene VR. <http://www.cyberedge.com/>; <http://www.hitl.washington.edu/sci/w/youngblut-edvr/D2128.pdf>; <http://www-vrl.umich.edu/>; <http://www.hitl.washington.edu/kb/onthenet.html>; (IRMC Critical Information Systems Technologies Course). VR Taxonomy includes: cab simulators (location-based entertainment), projected reality (mirrorworld and Mandala systems), augmented reality (uses head displays, access to diagrams, parts, and lists, Boeing prime user), telepresence (projecting your presence to a different location, operating equipment or robots, medical applications), desktop VR (uses personal computers), visual coupled displays (most popular, head-mounted devices (HMDs), head tracking, immersive sensation), and spatially immersive displays (theater

environment, for large groups, most popular is “Cave”) (IRMC Advanced Software Acquisition Management Course).

Examples of Virtual Reality Usage

Functional Area	Application	Function/Payoff
Education	VR Simulator	Train bus drivers
Education	Motorola	On-site training
Education	National Guard	Tank training
Education	Boston Computer Museum	Cell biology education
Education	Astronaut Space Walk	Astronaut training
Acquisition/design	Electric boat	Mockup of submarine
Acquisition/design	Rolls-Royce	Model of improvements
Acquisition/design	U.S. Army ARDEC	Weapons design
Acquisition/design	Stanford University CIS	3-D circuit design
Acquisition/design	Bechtel Engineering	3-D wind tunnel design
Medical	Eye tour	Surgical simulation
Medical	Acrophobia	Elimination of fear
Medical	Virtual Human	Surgical and medical training
Medical	Deep Vision	Virtual surgery
Medical	VR Simulator	Patient rehabilitation

See <http://www.hitl.washington.edu/kb/education.html> Virtual Reality Modeling Language (VRML). Could be used for 3-D help desks, real-time shopping/eCommerce, could be integrated with hypertext markup language and placed on the Internet (IRMC Advanced Software Acquisition Management Course).

VR Moon Phase pictures: <http://tycho.usno.navy.mil/vphase.html>

VR Society: <http://www.vrs.org.uk/>

VR Games: <http://www.worldwideamusements.com/Results.tpl?rnd=6761&cart=1020794451114238&category=2&startat=1>

VR Rentals: <http://www.interactiveparty.com/hi-tech.html>.

31. (Mo's Law of Evolutionary Development) You can't get to the moon by climbing successively taller trees. (David Akin, professor at the University of Maryland, "Akin's Laws of Spacecraft Design" Dr. Akin dakin@umd.edu or DAKIN@SSI.UMD.EDU. See http://spacecraft.ssl.umd.edu/academics/akins_laws.html.)

Viruses

Viruses are the most well known type of malicious code. They are self-replicating, infecting files on a computer. They tend to be relatively slow moving (taking days or weeks to infect a network community). The successful spread of a virus depends on how long it can go undetected. This can be done through encryption or other means. Each virus has a unique signature (bit pattern) that can be used for virus detection. Antivirus programs search for a large set of these specific signatures in order to detect and remove viruses—they are inherently reactive in nature. Significant risks of virus infection occur

through use of pirated software, bulletin boards, shareware, shared personal computers, or free floppy disks. The best defense (in addition to anti-virus software) lies in prudent network administration and good computer hygiene. Newer multipartite viruses infect executable files (e.g., .exe. and .com) and boot sectors. Companion viruses exploit the property that operating systems will prefer to exercise a .com before an .exe file if both have the same name. Macro viruses, which automate repetitive keystrokes, can be embedded in word or excel files, for instance. The "Hot" macro virus deletes documents 14 days after their infection. Macros may be the greatest present threat. This type is difficult to remove. Simple viruses do not attempt to hide themselves; complex viruses do.

There are so many viruses floating around, looking for a home, that anybody who needs one will have no trouble picking up one that suits the need. (Robertson Davies, *The Cunning Man*, Viking Penguin, New York, 1994, p. 280.)

Virus databases:

<http://vil.mcafee.com/>

<http://www.dr Solomon.com/>; <http://www.symantec.com/avcenter/>

<http://www.sophos.com/virusinfo/> ;

<http://www.symantic.com/avcenter/index.html>;

Virus Bulletin: <http://www.virusbtn.com/>

Downloads: <https://infosec.navy.mil/TEXT/download.html>.

Virus organizations:

European Institute for Computer Anti-Virus Research (EICAR):

<http://www.eicar.com/>

International Computer Security Association (ICSA): <http://www.trusecure.com/>

and http://www.infowar.com/p_and_s/p_n_s_122397a.html-ssi.

Virus data and hoaxes:

Computer security patches:

<http://office.microsoft.com/downloads/9798/Out98sec.aspx>

Virus Myths: <http://www.vmyths.com/>

Virus Web site: <http://www.sarc.com/avcenter/>

Anti Virus Research: <http://www.research.ibm.com/antivirus/SciPapers.htm>.

Vision and Mental Model—see Learning Organization

In a business sense, vision is a mental and emotional "picture" (can actually involve more senses than sight) of the future towards which one or one's organization is desired to proceed. Generally, an organization's vision is promulgated by upper management, but in truth, it only becomes a true organizational vision if and when it actually pervades the organization and becomes part of corporate culture. Vision statements can merely be explicit representations of a vision, a means of communicating the new direction or paradigm of a new CEO, or hypocritical "politically correct" hogwash that undermines management credibility. Management needs to "walk the talk" in order to make the

vision real, but leaders must also "talk the walk" and make their implicit or tacit vision substantial by communicating it explicitly. Such a balanced approach is mutually supportive.

A vision is based upon mental model(s) or internal pictures of the world, its "as-is" and its "to-be." Communicating these mental models includes "the ability to carry on "learningful" conversations that balance inquiry and advocacy, where people expose their own thinking effectively and make that thinking open to the influence of others." Communicating a vision involves enrollment versus compliance, in order to foster genuine commitment. Mental models depend upon inherent assumptions. Peter Drucker refers to a company's assumptions and mental model as its "theory of business" (*Harvard Business Review*, 94506, 1994, September-October) and asserts that "The same assumptions that had helped IBM prevail in 1950 proved to be its undoing 30 years later," and that "The assumptions on which the organization has been built and is being run no longer fit reality." Yet, "Every big, successful company throughout history, when confronted with such a surprise, has refused to accept it," despite Kotter's assertion (*Leading Change*, Jossey-Bass, 1995) "that people who are making an effort to embrace the future are a happier lot than those who are clinging to the past" (IRMC Leadership for the 21st Century Course).

Our experience shapes our perception. (Adam Smith, "The Meditation Game," *The Atlantic Monthly*, 1975, Vol. 236, No. 4, October, p. 40.)

Entities, properties, and preferences are all aspects of the human construction of the world ... It is essential, however, that we distinguish in that construction between phenomena that are objectively constructed and hence coexistent with particular entities, and those which are individual opinions and merely coincident. (Elliott Jaques, *Creativity and Work*, International Universities Press Inc., Madison, CT, 1990, pp. 288-289.)

Voice Application Networks (VANs)—see Automatic Speech Recognition, Networked Improvement Community, Natural Language Processing

A new generation of telephone technology using voice-activated applications to provide access to Web-like spoken information via existing telephone lines and equipment. They represent an important new tool for government to use to reach many of the groups currently experiencing limited computer access. VANs allow the same dynamic information interactions developed for the Internet to be provided by telephone. In response to a caller's spoken selection, up-to-date information is presented in a natural-sounding voice. The new applications are based on voice extensible markup language (XML), and deliver the required information through a combination of programmable interactive voice response and speech recognition. The same information provided on a Web site could be navigated by voice using the telephone, provided that the file structure is XML. Advancements in this technology mean that the voices that callers hear over the telephone are quite natural sounding and user friendly. In addition, advances in voice acoustics analysis have allowed providers to build highly sensitive recognition models that are able to account for such things as regional accents and dialects.

An example is Utah's new Traveler Advisory Telephone and Internet system, developed in preparation for the 2002 Olympics. The service will integrate information on

weather-related road conditions, accidents, congestion, and construction activities into one system. The same information is available by Web site and an interactive voice recognition telephone system. The dynamic information structure capability of XML makes it possible for current information to be continuously distributed in real-time to both services. Those unfamiliar with the Internet or simply traveling by car can call the 511 abbreviated dialing code. Using a natural-sounding voice, the Traveler Advisory service prompts the caller with questions. Callers respond by natural speech to the prompts and are provided the information requested. This approach mitigates the effects of digital disparities by providing the same information through the old familiar channel of the telephone and the newer, less widely available Internet.

VANs are maturing in power and popular appeal just in time to be effectively used by localities that are expanding the National N11 abbreviated dialing services. Today, 411 business directory services and 911 emergency services are most widely used by the general public. Soon more N11 numbers will become equally known and available. This nationwide dialing system allows telephone users to connect with standard service gateways throughout the country by dialing only three digits. The City of Hampton, VA, opened its 311 call center in September of 1999 to provide city residents with 24-hour-a-day, seven-day-a-week access to city services and information, ranging from reporting missed trash collection to answering questions about the city budget. The service has been very well received, and public satisfaction with the service has been extremely high, with the call center receiving an average of 600 calls a day (May 2000) (Susan Turnbull, The Federal Architecture and Infrastructure Committee of the Federal CIO Council's guide, *Extending Digital Dividends: Public Goods and Services that Work for All*, on the Federal CIO Council Knowledge Management Working Group CD distributed by the Department of the Navy Chief Information Officer, 202-501-6214, or susan.turnbull@gsa.gov).

A word too much always defeats its purpose. (Arthur Schopenhauer, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 225.)

Voice, Video, and Data (VVD)—see Data, Video TeleConferencing

The three major categories of information communications. VVD can be transmitted over phone lines or by other means (e.g., radio frequencies). Voice is aural or audio communications. Video is pictorial, visual, television, communications. Data is computer (ones and zeros) communications between machines.

You'd be surprised by how much you can observe by watching. (Yogi Berra, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 61.)

Vortal, <http://www.webopedia.com/TERM/v/vortal.html>

Vertical industry portal is a portal Web site that provides information and resources for a particular industry. Vortals are the Internet's way of catering to consumers' focused-environment preferences. Vortals typically provide news, research and statistics, discussions, newsletters, online tools, and many other services that educate users about a specific industry. As the Web becomes a standard tool for business, vortals will join and

maybe replace general portal sites like AOL and Yahoo! as common gateways to the Internet.

<http://www.wherewithal.com/pb/ep.html?track=goto&term=vortal>

<http://www.netbx.com/?source=overture>

http://www.vortalgroup.com/index_flash.html

[http://vertical-search.fusionbot.com/.](http://vertical-search.fusionbot.com/)

[In response to a visitor to his home saying, "Wow, Yogi, what a beautiful mansion."]
It's nothing but a bunch of rooms. (Yogi Berra, *The Yogi Book*, Workman Publications, New York, 1998, p. 57.)

Vulnerability

A weakness in a system that potentially allows it to be successfully attacked or exploited. In IT, security vulnerabilities allow hackers and crackers into a system so that the system could be modified, utilized for unauthorized purposes, destroyed, or otherwise misused. Vulnerability is intimately associated with risk.

It is people's sense of helplessness and powerlessness that first creates apathy and self-centeredness and eventually leads to extremism. (Peter Block, *Stewardship*, Berrett-Koehler Publications, San Francisco, 1993, p. 240.)

Comprehensive list of vulnerabilities/exposures: <http://cve.mitre.org/>

CIA cites United States' vulnerability to computer attack:

<http://www.cia.gov/csi/studies/summer00/art08.html>.

W

War Driving

A hacker procedure of (physically) driving around neighborhoods with a wireless-enabled personal computer, looking for wireless home networks to invade.

When have you ever seen someone who had no doubts who was also correct about anything? (Orson Scott Card, *Xenocide*, Tom Doherty Books, New York, 1991, p. 509.)

Wavelength

The speed of light divided by the frequency of a signal or, equivalently, the speed of light times the period of the signal. It determines the length of the antenna needed to receive the signal.

You can't push a wave onto the shore faster than the ocean brings it in. (Susan Strasberg, quoted by Noah ben Shea in *Great Jewish Quotes*, Ballantine, New York, 1993.)

Wearable Computer (WC)

WCs are small computers that are worn on a person. They often include a "heads up display" such as used by fighter pilots. They can also be combined with virtual reality products. Companies (such as Xybernaut) have WC products available. WCs maintain one's ability to have extensive knowledge, information, and data at one's fingertips throughout the day. It is a relatively short step from Dick Tracy's two-way wrist radio/TV, to today's personal digital assistants, to tomorrow's WCs. (Star Trek Deep Space Nine's Vortas (e.g., Weyoun) apparently controlled starships using WCs with heads-up displays.) Natural language processing (NLP) facilitates the use of WCs, since one of the main limitations to reducing the size of computers lies in the input/output limitations of the human body. Keys, for instance, must be large enough and separated enough for use by human fingers. Similarly, displays must be refreshed sufficiently to prevent eyestrain and large enough for easy reading. Microphones and earpieces, however, can be made much smaller. Speaking is also considerably faster than typing.

New and stirring things are belittled, because if they are not belittled, the humiliating question arises, "Why then are you not taking part in them?" (H. G. Wells, *The World of William Clissold*, quoted by Jacob Braude in *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall Inc., Englewood Cliffs, NJ, June 1961, p. 313.)

Web Beacons

Also known as clear GIFs or single-pixel GIFs, are small image files placed on Web pages and within Web-based e-mail newsletters. Working in conjunction with cookies, Web beacons allow accurate counting of the number of unique users who have visited a specific page and the number of times those pages are displayed. Web beacons can also be used to determine how many people opened a Web-based e-mail newsletter. This information is only collected in aggregate form and should not be linked to personally identifiable information. Without cookies and Web beacons, it would be difficult to know

which services have a larger audience than others. Tracking audience size helps Web owners better understand when to launch new services and enhance current offerings. Any image file on a Web page can act as a Web beacon. Third-party advertising networks may use Web beacons in their advertisements. Because Web beacons work in conjunction with cookies, you can prevent our Web beacon from collecting anonymous information by setting your Web browser to refuse all cookies or a particular one. Web beacons are built into Web pages, so non-functional Web beacons will continue to appear even if you refuse a network cookie.

28. (Ranger's Law) There ain't no such thing as a free launch. (David Akin, professor, University of Maryland, "Akin's Laws of Spacecraft Design" [received via Internet e-mail] and confirmed by Dr. Akin dakin@umd.edu or DAKIN@SSL.UMD.EDU. See http://spacecraft.ssl.umd.edu/academics/akins_laws.html.)

Webification Methods—see Hypertext Markup Language (Html), Webify

1) Static HTML is used to publish reports over the Web by converting existing documents to HTML format. It can be used to connect clients to a data warehouse, for instance. Documents are not limited to word processing (e.g., Excel spreadsheets can be so published). Documents can be posted to a Web site. This process is simple and easy, but lacks interaction (user input) and has the usual download problems (latency, viewing, printing times and resources required).

2) Common gateway interface (CGI) is an application (<http://hoohoo.ncsa.uiuc.edu/cgi/> and <http://www.cgi-resources.com/>) that manages a database/Web server interface. It allows collection and publication around the world. It is useful in distance learning, electronic commerce, information distribution, etc. It enables users to fill out forms over the Web. Forms run programs (or scripts) through the CGI. Programs are language independent though the practical extraction and report language (PERL) is the most popular language. Visual basic is popular on Microsoft operating systems. Tool command language (TCL), Unix shells, and C (very fast) are also used. CGI offers easy maintenance, real-time statistics, and interactivity. It can perform powerful searches, collect information from people, and can personalize an organization's services (useful for customer and supplier relations management); however, it has performance and scaling limitations.

3) Client-side scripting embeds software routines into the HTML pages that are executed by the Web browser at the client's location. They can be used to bake database requests. Languages include JavaScript (Netscape) and VBScript (Microsoft). The latter is limited to Internet Explorer, has more functionality than the former, and targets intranets. See <http://www.cognos.com/products/powerhouse/phwebwp2.html> and (resource for JavaScript code) <http://www.newarchitectmag.com/webcoder/> and <http://www.newarchitectmag.com/>.

4) Server Side Scripting executes on the Web server versus the client. It adds functionality to generate HTML pages, read/write files, and directly access databases. Netscape has a server-side version of JavaScript; Microsoft uses active server pages (ASP) to dynamically generate HTML created by applications. Scripts are embedded in HTML documents typically in VBScript. ASP works best with Microsoft SQL Server databases.

Server-Side Scripts are centrally maintained and executed and have better performance than CGI, but have scalability, reliability, portability, security, standardization concerns.

5) Advanced mobile code technologies include Java, ActiveX, Dynamic HTML (see HTML), and XML. See individual item listings herein. Webification, while greatly increasing the availability and accessibility of knowledge, information, and data, raises major security issues. See Kris Jamsa's heavy duty Internet Programming and Danny Goodman's accessible and practical *JavaScript Handbook* (IRMC Data Management Strategies and Technologies Course).

Only Robinson Crusoe could have everything done by Friday.

12, There is never a single right solution. There are always multiple wrong ones though. (David Akin, professor, University of Maryland, "Akin's Laws of Spacecraft Design" [received via Internet e-mail] and confirmed by Dr. Akin dakin@umd.edu or DAKIN@SSL.UMD.EDU. See http://spacecraft.ssl.umd.edu/academics/akins_laws.html.)

Webify—see Webification

To adapt or implement an application so that it can be accessed and utilized over the Internet. An application can be Web-enabled so that it is directly accessible or usable over the Web. This approach results in faster access times (lower latency). Alternatively, an application can be hosted behind a Web portal using specific software for this purpose (e.g., Citrix). This approach requires no change to the application software itself but does require some expense and does result in slightly increased latency. The Navy Standard Integrated Personnel System (NSIPS) was used to test this approach by the Space and Naval Warfare Systems Command System Center Charleston's detachment at the Washington Navy Yard. In a short time, they were able to webify NSIPS for Web access for a limited number of simultaneous users. Additional users would have required additional hardware that was not available for the demonstration project. Task Force Web has been stood up to address and implement the Navy's desire to access virtually all of its applications via the Web. To reduce costs, consolidation of extant applications is necessary. This very much parallels performing business process reengineering prior to introducing IT versus manual processing. Webification is an IT capital planning and investment decision. On April 25, 2000, Vice President Albert Gore stated that, "One important way to make government cheaper, faster, and better is by putting more critical services on the Internet, and taking full advantage of the information revolution that is taking place in private industry" (*Leadership for the New Millennium: Delivering On Digital Progress and Prosperity*, 3rd annual report of the U.S. Government Working Group on Electronic Commerce, January 16, 2001).

Art for art's sake makes no more sense than gin for gin's sake. (W. Somerset Maugham. *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 49.)

Web Page—see Portal, Web Site

A computer file, encoded in hypertext markup language (HTML), that contains text, graphics files, sound files accessible through the World Wide Web (WWW). Every Web

page has a unique uniform resource locator (URL) address (*Encarta Encyclopedia Online*, Microsoft, Inc., <http://encarta.msn.com> [USA]).

Web developer's virtual library: <http://www.wdvl.com/>.

If people don't want to come to the ballpark, how are you going to stop them? (Yogi Berra, *The Yogi Book*, Workman Publications, New York, 1998, p. 36.)

Web Site—see Portal, Web Page

A file of information located on a server connected to the World Wide Web (WWW). WWW protocols and software allow the global computer network (the Internet) to display multimedia documents. Web sites may contain text, photographs, illustrations, video, music, or computer programs. Web site content includes hypertext and icons that link to other, related sites (*Encarta Encyclopedia Online*, Microsoft, Inc., <http://encarta.msn.com> {USA}).

Web Developers' Journal <http://www.webdevelopersjournal.com/>.

The wise only possess ideas; the greater part of mankind are possessed by them. (Samuel Taylor Coleridge, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 505.)

WebTV™

Now owned by Microsoft, WebTV was one of the first entries in the much-publicized convergence of the World Wide Web with television. You buy a set-top box similar to a cable-TV box, then sign up with the WebTV access service and browse Web pages using a WebTV's browser and a hand-held control. A keyboard is provided optionally. WebTV uses your television set as an output device; the signals arrive, however, through a modem and a telephone line at 33.6 kbps or 56 kbps (*Glossary of IM/IT & KM Terms*).

Television has proved that people will look at anything rather than each other. (Ann Landers, quoted by Noah ben Shea in *Great Jewish Quotes*, Ballantine, New York, 1993.)

Television—chewing gum for the eyes. (Frank Lloyd Wright, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 479.)

Wellsprings of Knowledge

According to Dorothy Leonard-Barton in *Wellsprings of Knowledge, Building and Sustaining the Sources of Innovation* (Harvard Business School Press, 1995), there are four main techniques used for this purpose:

A man should learn to detect and watch that gleam of light which flashes across his mind from within more than the lustre of the firmament of bards and sages. Yet he dismisses without notice this thought because it is his. In every work of genius we recognize our own reflected thoughts; they come back to us with a certain alienated majesty. Great works of art have no more affecting lesson for us than this. They teach us to abide by our spontaneous impression with a good-humored inflexibility greater than most when the whole cry of voices is on the other side. Else tomorrow a stranger will say with masterly

good sense precisely what we have thought and felt all the time, and we shall be forced to take with shame our own opinion from another. (Ralph Waldo Emerson, quoted by Ralph M. Lewis in *The Immortalized Words of the Past*, Ancient Mystical Order Rosae Crucis, San Jose, CA, 1986, p. 254.)

1) Integrated problem solving.

Never tell people how to do things. Tell them what to do and they will surprise you with their ingenuity. (George S. Patton, *SAM OA News*, 1996, Vol. 2, Issue 13, January 19.)

How does it happen there are 12 on a jury? In the beginning the idea was to choose one juror from each sign of the zodiac. It was believed that in this way a better general opinion could be obtained. (Jacob Braude, *New Treasury of Stories for Every Speaking and Writing Occasion*, Prentice Hall Inc., Englewood Cliffs, NJ, June 1961, p. 262.)

2) Implementing new methods, processes, and tools.

The best way to predict the future is to invent it. (Alan Kay, Director of Research, Apple Computers.)

Moreover, as psychological research has demonstrated, the acquisition of knowledge can occur through nonconscious processes, through "implicit learning." That is, we can acquire knowledge and an understanding of how to navigate our environment "independently of conscious attempts to do so."³⁵ One intriguing implication is that not only can we "know more than we can tell,"³⁶ but we often know more than we realize. Furthermore, our efforts to rationalize and explain nonconscious behavior may be futile, if not counterproductive ... Some managers are beginning to question why all employees cannot contribute to innovation. One manager in a toy manufacturing company complained that in a recent meeting with 20 people, "19 thought they didn't need to be creative." (Dorothy Leonard and Sylvia Sensiper, "The Role of Tacit Knowledge in Group Innovation," *California Management Review*, Berkeley, CA, Spring 1998, Vol. 40, Issue 3, pp. 112-132.)

3) Experimentation.

Creativity. If I'm right, it calls for a different kind of grammar. A completely different way of looking at error. One that *welcomes* error. Embraces it ... But how can *chaos* engender inventiveness? By shattering preconceptions. By allowing illogical, preposterous, even obviously *wrong* statements to parse in reasonable-sounding expressions ... by putting manifest contradictions on an equal footing with the most time-honored and widely held assumptions, we are tantalized, confused. Our thoughts stumble out of step ... It's how creativity works ... A mind that's afraid to toy with the ridiculous will never come up with the brilliantly original—some absurd concept that future generations will assume to have been "obvious" all along. (David Brin, *Brightness Reef* (Book I of the *New Uplift Trilogy*), Bantam Books, New York, 1995, p. 548.)

4) Outside sources.

If the only tool you have is a hammer, you tend to see every problem as a nail. (Defense Systems Management College, Manufacturing Management Department Quote of the Day No. 2.)

Wide Area Network (WAN)

A system of leased (or owned) communications links that are usually used to interconnect geographic regions to provide routing, switching, or gateway points to metropolitan or local area networks, or other WANs. It consists of at least one server, client workstation, a network operating system, and a communications link (*Glossary of IM/IT & KM Terms*).

It was hard to have a conversation with anyone; there were too many people talking.
(Yogi Berra, *The Yogi Book*, Workman Publications, New York, 1998, p. 42.)

Wireless

A method of connecting to the Internet or a local area network (LAN) via radio waves, instead of wire or cable. Wireless technology enables an Internet service provider (ISP) to add users without the expense of adding cable to its own telephone company connection, but "line of sight" is required, which means that the radio antenna installed at each node must have an unobstructed path to the antenna maintained by the ISP. Each antenna can serve 50–100 workstations at T-1 speed (from *Glossary of IM/IT & KM Terms*). Personal digital assistants can now use wireless mode to communicate with computers, the Internet, LANs, and each other. The Information Resources Management College (among others) has created wireless LAN connectivity from its students' workstations. Such systems, however, can experience interference from blue-tooth enabled devices that provide wireless connectivity to many hand-held devices. Wireless (at about 1.1 Mbs) is much slower than wire systems (at up to 1 Gbs), which can be 1,000 times faster. The term wireless not only refers to LAN data transmission (e.g., IEEE 802.11, blue tooth, Home RF) but also for wireless phone systems (e.g., global system for mobile communications [GSM], analog mobile telephone service [AMPS]) and wireless cable television (e.g., multipoint multichannel distribution service, local multipoint distribution service); (IRMC Managing Networked Security in a Networked Environment Course).

All our final decisions are made in a state of mind that is not going to last. (Marcel Proust, quoted by Noah ben Shea in *Great Jewish Quotes*, Ballantine, New York, 1993.)

Wireless Application Protocol (WAP)—sometimes incorrectly called Wireless Access Point

A global, open specification that allows users to access information instantly via handheld wireless devices, such as mobile phones, pagers, two-way radios, smart phones and communicators. WAPs that use displays and access the Internet run micro-browsers with small file sizes that can accommodate the low-memory constraints of handheld devices and the low-bandwidth constraints of a wireless-handheld network. WAP supports most wireless networks and is supported by current operating systems (from *Glossary of IM/IT & KM Terms*).

Life contains but two tragedies. One is to not get your heart's desire; the other is to get it. (Socrates, in *3,500 Good Quotes for Speakers*, Gerald F. Lieberman, Ed., Doubleday, Garden City, NY, 1983, p. 70.)

Wireless Equivalent Privacy (WEP)

An IEEE 802.11 protocol algorithm to assure security equivalence for wireless systems. However, it does not actually ensure equivalence to wire systems. Wireless security has been demonstrated to exhibit flaws, making it vulnerable to attack. See WTLS. WEP uses symmetrical encryption without key management. Encryption is, however, selectable: none, 64-bit, or 128-bit. If chosen encryption is the RSA (Rivest, Shamir, Adelman) data security RC4 PRNG (pseudo random number generator) algorithm. However, WEP uses 40- or 104-bit keys, which are concatenated with a 24-bit "initialization vector," resulting in a 64- or 128-bit key. This key is input into a PRNG to encrypt the data. Cisco has a similar system with 64- or 88-bit keys. Hackers, however, have recently succeeded in analyzing the vectors to enable them to defeat the system. Therefore, WEP systems are not considered secure at present (IRMC Managing Networked Security in a Networked Environment Course).

You never have time to do it right, but you always have time to do it again (or over).

Wireless Markup Language (WML)

A simplified version of hypertext markup language used in wireless devices supported by the wireless application protocol. However, the Japanese firm NTT DoCoMo uses a compact version of WML called CWML (from *Glossary of IM/IT & KM Terms*).

The language I have learn'd these forty years,
My native English, now I must forgo;
And now my tongue's use is to me no more
Than an unstringed viol or a harp.

(William Shakespeare, 1564-1616, *Pericles, Prince of Tyre*, from *The Oxford Dictionary of Quotations*, Oxford University Press, New York, 1980, p. 478, No. 10.)

Wireless Transport Layer Security (WTLS)

The method used to implement security into wireless systems using WAP. It is based on secure sockets layer 3.0, but it is not an end-to-end solution. It requires the WAP gateway to be trusted, since the encrypted information must be decrypted at the gateway and encrypted again for transmission over the network.

History has no laws, and all we find there are useful illusions. (Orson Scott Card, *Children of the Mind*, Tom Doherty Associates, NY, 1996, p. 89.)

Wiretap Statute, 18 U.S.C. § 2510 et seq.; 47 U.S.C. § 605

Prohibits use of eavesdropping technology and interception of radio communications, data transmission, and telephone calls without consent. Significant exceptions: one-part consent rule; business extension exemption (IRMC Assuring the Information Infrastructure Course).

As long as words are in your mouth you are their lord; once you utter them, you are their slave. (Ibn Gabirol, *Leo Rosten's Carnival of Wit*, E. P. Dutton & Co., New York, 1994, p. 39.)

Wisdom

The quality of being wise; knowledge, and the capacity to make due use of it; knowledge of the best ends and the best means; discernment and judgment; discretion; sagacity; skill; dexterity (*Glossary of IM/IT & KM Terms*). Wisdom is considered a higher order function on the human development and ability spectrum. It is still unclear how it would fit into the spectrum from data to information to knowledge except that it is beyond knowledge. Some people place understanding after knowledge and then wisdom after understanding. The challenge is that the spectrum begins at a more explicit and physical level (ones and zeros) to a more implicit and mental level, even delving perhaps into the metaphysical or spiritual (at the wisdom level). Thus the spectrum is qualitative as well as quantitative, greatly complicating its understanding and exposition. It appears that the function is at least two-dimensional versus a uni-dimensional straight line (linear) function. Such a view would accord well with the systems thinking approach touted by KM experts.

Wisdom is a subtle, spiritual, instant power to understand the soul of things, and also to apply this understanding ever to immediate opportunity. (Ruth Phelps, *Some Mystical Adventures*, Rosicrucian Analytical Discussions, RAD8-34-2, paragraph 2.)

It is easier to put an ox into an eggcup than for a man full of conceit to receive wisdom. (Ernest Bramah, *Kai Lung Unrolls his Mat*, Ballantine Books, New York, 1974, p. 139.)

In the end, it is impossible to have a great life unless it is a meaningful life. And it is very difficult to have a meaningful life without meaningful work. (Jim Collins, *Good to Great*, Harper Business, New York, 2001, p. 210.)

Workflow

The defined series of tasks within an organization to produce a final outcome. Sophisticated workgroup computing applications allow you to define different workflows for different types of jobs. So, for example, in a publishing setting, a document might be automatically routed from writer to editor to proofreader to production. At each stage in the workflow, one individual or group is responsible for a specific task. Once the task is complete, the workflow software ensures that the individuals responsible for the next task are notified and receive the data they need to execute their stage of the process (<http://www.webopedia.com/>).

There was a young lady of Wight
Who traveled much faster than light.
She departed one day,
In a relative way,
And arrived on the previous night.
(Stephen Hawking, *The Illustrated A Brief History of Time*, Bantam Books, New York, 1996, p. 199.)

World Wide Web (WWW, the Web); World Wide Web Consortium <http://www.w3.org>

An Internet facility that links documents locally and remotely. The Web document, or Web page, contains text, graphics, animations, and videos, as well as hypertext links. The

links in the page let users jump from page to page (hypertext), whether the pages are stored on the same server or on servers around the world. Web pages are accessed and read via a Web browser, the two most popular being Internet Explorer and Netscape Navigator (*Glossary of IM/IT & KM Terms*).

Life is a great big canvas, and you should throw all the paint on it you can. (Danny Kaye, *Capital M*, Metropolitan Washington Mensa, 1994, Vol. 29, No. 5, May 1, p. 1.)

Worm

1) An independent program that replicates from machine to machine across network connections. It can clog the system as it spreads. They are similar to viruses but do not need a carrier program. Worms infiltrate legitimate programs and alter or destroy the data. Worms are more dangerous than viruses and spread more quickly. The "Christmas Tree Worm" of December 9, 1987 paralyzed the IBM network. It was a combination of a Trojan horse and a chain letter. It posted a display, made copies of itself, and mailed the copies to everyone on the user's correspondence list.

2) A write once, read many times type of computer memory.

What we call progress is the exchange of one nuisance for another nuisance. (Havelock Ellis, quoted by Lawrence J. Peter in *The Peter Prescription*, William Morrow & Co. New York, 1972, p. 11.)

X

X.509—see PKI

The main standard for digital certificates; it specifies their contents to include version, serial number, algorithm used, issuer, period of validity, subject, public key information, and signature. While many different organizations issue X.509 certificates, they are not necessarily mutually compatible. X.509 includes extension fields and flags that are interpreted differently by vendors—reducing their usefulness. Also, unlike pretty good privacy certificates, X.509s can only be signed by one certifying authority per certificate. X.509 complies with the International Telecommunications Union (ITU)-T-509 international standard. The PKIX (Public-Key Infrastructure (X.509)) working group (of the Internet Engineering Task Force IETF, Information Exchange Task Force, was established in Autumn 1995 to develop X.509 public key infrastructure (PKI) Internet standards (<http://www.ietf.org/html.charters/pkix-charter.html>). The Department of Defense PKI Program Management Office issued DoD X.509 Certificate Policy (version 5.2, November 13, 2000 <http://iase.disa.mil/pki/certpl52.pdf>).

This man, brilliant, imperfect, but well-meaning and filled with a love that was strong enough to inflict suffering when it was needed. (Orson Scott Card, *Children of the Mind*, Tom Doherty Books, New York, 1996, p. 259.)

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1G, 2G, 2.5G, 3G (Wireless Generations)

The first generation (1G) of mobile cellular communications systems were analog. Primarily used for voice, they were introduced in the late 1970s and early 1980s. Starting in the 1990s, second-generation (2G) systems used digital encoding and have been used mostly for voice. Between now and the third generation (3G), which is expected in the 2003–2005 timeframe, a variety of 2G+ or 2.5G techniques are being used to improve the speed of data for enhanced e-mail and Internet access. 3G was designed for high-speed multimedia data and voice. Its goals include high-quality audio and video and advanced global roaming, which means being able to go anywhere and automatically be handed off to whatever wireless system is available (e.g., in-house phone systems, cellular, satellite, etc.) (*Glossary of IM/IT & KM Terms*). 4GL is fourth generation language.

Let one who is in the present age go backward to the ways of antiquity ... calamity is sure to come. (Confucius, *The Wisdom of Confucius*, Peter Pauper Press, Mt. Vernon, NY, 1963, p. 30.)

8121(a) and (b) and 8102—see Clinger-Cohen Act (CCA)

Sections of the Defense Authorization Acts of 2000 and 2001 respectively; the latter continues the former. They refer to the Clinger-Cohen Act. They require all mission-critical or -essential IT systems to be registered with the Department of Defense Chief Information Officer (CIO) (Assistant Secretary of Defense (Command, Control, Communications and Intelligence) and meet DoD data requirements. Funding for any unregistered systems was to end on March 31, 2000. Major automated information systems (MAIS) receive acquisition categories of (IAM) (monetarily large IT programs requiring DoD approval per DoD 5000 requirements) and IAC (delegated to component or Service/MILDEP approval) regardless of funding. See CCA, DAE, and PM above for further information on ACATs). These levels are similar to normal DoD acquisition category IIs (versus Is). Milestone I, II, and III approvals require CIO certification of compliance with the CCA to be provided to Congress in a timely manner. Compliance areas specified are: business process reengineering, analysis of alternatives (AoA), performance measures (metrics), economic analysis, and information assurance (IA). These requirements are to be added to DoDI 5000.2 (DoD's acquisition bible); (IRMC Advanced Information System Acquisition Course) http://www.safaq.hq.af.mil/acq_pol/dod5000/final/.

20. A bad design with a good presentation is doomed eventually. A good design with a bad presentation is doomed immediately. (David Akin, professor, University of Maryland, "Akin's Laws of Spacecraft Design" [received via Internet e-mail] and confirmed by Dr. Akin dakin@umd.edu or DAKIN@SSL.UMD.EDU. See http://spacecraft.ssl.umd.edu/academics/akins_laws.html.)

FOOTNOTES

1. McClure, David L. mcclured@gao.gov, 202-512-6257, "INFORMATION SECURITY: Advances and Remaining Challenges to Adoption of Public Key Infrastructure Technology" General Accounting Office (GAO) Report, <http://www.gao.gov/cgi-bin/gettrpt?rptno=GAO-01-277> February 2001, GAO-01-277.

2. The UCL & LCL are determined by the percentage of events required to be within the two limits. For 3 sigma (plus or minus), 97.5 percent of the instances will lie between the two limits (if the sample size is sufficient). Common causes are variations within the limits=random, special causes are outside the limits. Note: 2.5 percent of the instances should lie outside the limits.

3. The term "creative abrasion" was coined by Gerald Hirshberg, President of Nissan Design International. See Dorothy Leonard-Barton, *Wellsprings of Knowledge* (Boston: Harvard Business School Press, 1995), p. 63.

4. Ikujiro Nonaka and Hirotaka Takeuchi, *The Knowledge Creating Company* (New York, New York: Oxford University Press, 1995), p. 61.

5. Katherine Y. Williams and Charles A. O' Reilly III, "Demography and Diversity in Organizations: A Review of 40 Years of Research," *Research in Organizational Behavior*, Vol. 20 (1998, forthcoming). The authors note that the same cannot necessarily be said of the implementation phase of the innovation process. This review also points out that while "functional diversity has positive effects on group performance," other forms of diversity have been found to have negative effects. Information and decision theories maintain that increased diversity more likely has a positive effect on innovations, complex problems, or product designs, (which are the domains about which we are most concerned here), but social categorization and similarity/attraction theories suggest that diversity is more problematic and can have a negative effect on group process and performance. Much depends, then, not only on the task being addressed but on exactly what kind of diversity is being researched, and through what theoretical lens the material is viewed. Clearly, some kinds of diversity can lead to disharmony. As we suggest in this article, the conflict that arises from intellectual disagreement has to be managed carefully, lest it spill over into personal anger.

6. Lisa Hope Pelled, "Demographic Diversity, Conflict, and Work Group Outcomes: An Intervening Process Theory," *Organization Science*, 7/6 (1996): 615-631.

7. See Dorothy Leonard and Susan Straus, "Putting Your Company's Whole Brain to Work," *Harvard Business Review*, Vol. 75/4 (July/August 1997): 110-121.

8. Garceau, Linda R. "Internet Fraud" *Ohio CPA Journal*. Columbus. Jul-Sep 2000, Volume 59, Issue 3, Pages 50-55, 423-439-4432.

9. From Snake Oil: <http://www.cs.usask.ca/~dtr467/490/proj/theory.shtml> as quoted in the IRMC's Managing Networked Security in a Networked Environment course notes.

10. GAO/T-AIMD/GGD-00-179, May 22, 2000, see McClure, op. cit.

11. GAO/AIMD-00-282, September 15, 2000; see McClure, op. cit.

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12. That "requires GSA to provide government-wide online access to information about products and services available under the multiple award schedules program." McClure, Op. Cit.
 13. OMB Procedures and Guidance on Implementing the Government Paperwork Elimination Act, April 25, 2000, pages 19-20.
 14. Alberto Cambrosio and Peter Keating, "Going Monoclonal: Art, Science and Magic in the Day-to-Day Use of Hybridoma Technology," *Social Problems*, 35/3 (June 1988) p. 249.
 15. Paget, Paul "The Security Behind Secure Extranets" *Enterprise Systems Journal*, Dallas, December 1999, Vol. 14, Issue 12, Pages 74-77.
 16. *Ibid.*
 17. McClure, op. cit.
 18. Johner, Heinz, *Deploying a Public Key Infrastructure*, IBM Corporation, Norwood, MA, 2000, ISBN 0738415731 <http://www.books24x7.com/marc.asp?isbn=0738415731>.
 19. Pozerycki, Bill "An Evolution in B-to-B Security" *Enterprise Systems Journal*, Dallas, Jan 2001 Vol. 16, Issue: 1, Pages 26-31.
 20. Also see Paget, op. cit.
 21. McClure, op. cit.
 22. Pozerycki, op. cit.
 23. PriceWaterhouseCoopers, *Technology Forecast 1999*, Menlo Park, CA, p. 613.
 24. Brands, Stefan A. *Rethinking Public Key Infrastructure and Digital Certificates* The MIT Press © 2000, 314 pages, ISBN: 0262024918
<http://www.books24x7.com/marc.asp?isbn=0262024918>.
 25. *Ibid.*
 26. McClure, op. cit.
 27. POCs include: Christopher.wren@gsa.gov, thomas.crowder@gsa.gov.
 28. James R. Lincoln, Christina L. Ahmadjian, and Eliot Mason, "Organizational Learning and Purchase-Supply Relations in Japan: Hitachi, Matsushita, and Toyota Compared," *California Management Review*, Berkeley, CA, Spring 1998, Vol. 40, Issue 3, pp. 241-264.
 29. See Ed Yourdon's *Decline and Fall of the American Programmer*, Prentice Hall 1992 and Norman Schneidewind's "The Software Crisis," *Scientific American*, 1994 (IRMC NWC).
 30. Gina Cerminara, *Many Mansions* p. 197.
 31. Myers Briggs: S = sensing or sensate; J = judging.
 32. Myers Briggs: N = intuition; F = feeling.
 33. W. Mark Fruin, *Knowledge Works: Managing Intellectual Capital at Toshiba*, (New York, New York,: Oxford University Press, 1997).
<http://www.amazon.com/exec/obidos/ASIN/0195081951/inktomi-bkasin-20/103-9716688-8734243>, home page: http://www.cob.sjsu.edu/fruin_m/.
 34. Jim Collins, *Good to Great*, Harper Business New York, 2001.
 35. Arthur. S. Reber, "Implicit Learning and Tacit Knowledge," *Journal of Experimental Psychology*, 118 (1989) p. 219.

36. Michael Polanyi, *The Tacit Dimension* (New York, Doubleday, 1966), p. 4.